

THE NAVY'S ENVIRONMENTAL MAGAZINE

Currents

Winter 2007

Fueling THE Navy in a Petroleum-Challenged World

Yokosuka/NAVSEA Partnership Reduces Hazardous Materials
NAS Key West Swapping Invasives with Natives
PESHE DAT Does PESHEs



Currents

The Navy's Environmental Magazine • Winter 2007

CHIEF OF NAVAL OPERATIONS

Director
Environmental Readiness Division
Rear Admiral James A. Symonds

CURRENTS STAFF

Managing Editor
Bruce McCaffrey
Bruce McCaffrey Consulting, Inc.
brucemccaffrey@sbcglobal.net • 773-376-6200

Art Director
Victoria Bermel

Distribution Manager
Margaret Anderson
Naval Facilities Engineering Service Center
margaret.anderson1@navy.mil • 904-317-2039

EDITORIAL BOARD

Chief of Naval Operations
Environmental Readiness Division
David Price
david.g.price@navy.mil • 703-602-2550

Naval Air Systems Command
Dave Brock
david.l.brock@navy.mil • 904-317-2038

Naval Facilities Engineering Command
Associate Editor
Kathi Jones
kathleen.jones1@navy.mil • 805-982-4899

Naval Sea Systems Command
Deborah Verderame
deborah.verderame@navy.mil • 202-781-1837

Naval Supply Systems Command
Roger Fry
roger.fry@navy.mil • 717-605-5300



COVER

In today's petroleum-challenged world, the Department of Navy has re-energized its alternative fuel programs with new policy, fleet integration, and new technology demonstrations.

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Fueling the Navy in a Petroleum-Challenged World

Forging Ahead with AFV Demos & Fleet Integration

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This magazine is an authorized publication for members of the Department of Defense. Statements made in the N45 Outlook column reflect the official environmental policy of the Navy. The contents in the remainder of the magazine are not necessarily the official views of, or endorsed by, the U.S. Government, the Department of Defense, or the United States Navy. Inclusion of any product or service in any *Currents* feature article does not constitute an endorsement by the Navy. The Navy encourages all readers to check with the appropriate supervising authority prior to using any product or service mentioned in the magazine.

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We Are Not Alone

Navy Leveraging International Efforts to Enhance Maritime Environmental Protection

As I have stressed repeatedly through this column, the U.S. Navy takes its environmental protection responsibilities very seriously. We are not alone in this regard. Through our international cooperation activities, especially within the North Atlantic Treaty Organization (NATO), the U.S. Navy leverages the expertise and investment of foreign navies to enhance our understanding of maritime environmental protection requirements, seek common solutions that promote standardization and interoperability amongst the navies, and save time and money. We also exchange information on our worldwide oil and hazardous material spill response capabilities. In this column I will elaborate on how our Navy takes a leadership role within NATO and NATO Partnership for Peace (PfP) to increase afloat environmental protection standardization and interoperability and how all the above works to support the Naval Component Commander and Combatant Commander.

Worldwide Oil and Hazardous Substance (OHS) Contingency Planning and Response

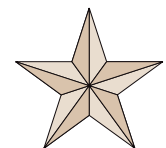
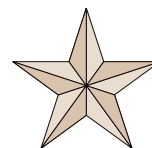
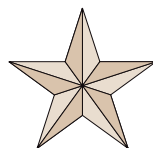
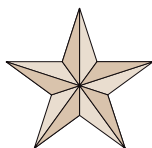
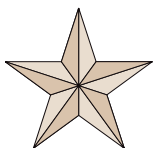
The Navy maintains a vast oil spill contingency planning and response capability both domestically and overseas. Within the U.S., we have a Navy On Scene Coordinator (NOSC) assigned to each of the Navy Region Staffs. The NOSC is the senior Navy official responsible for coordinating contingency planning and response for oil and hazardous substance spills that are beyond the capability of a facility to effectively mount a response. The NOSC ensures that the facility and regional response plans are compatible, that the facilities have adequate response equipment, and that the required training is being accomplished. Overseas NOSCs perform similar functions within their regions, with the added responsibility for coordination with Host Nation Authorities. Fleet NOSCs are responsible for contingency planning and response for

spills that occur from vessels within their Area of Responsibility (AOR). Shore NOSCs may obtain coastal and harbor spill planning and response assistance from the Naval Facilities Engineering Command (NAVFAC). Both the shore NOSCs and the Fleet NOSCs may obtain technical support and open water spill response equipment and expertise from the Supervisor of Salvage and Diving (SUPSALV). SUPSALV maintains a comprehensive inventory of OHS response equipment at Emergency Ship Salvage Material (ESSM) bases in Williamsburg, VA, Port Hueneme, CA, Anchorage, AK, Pearl Harbor, HI, and Bahrain. This is a deployable capability by military transport aircraft should the need arise.



International Cooperation

Key to our international cooperation efforts is enhancing our understanding of the environmental protection regulatory regime of foreign nations. We track legislative and regulatory efforts within the European Union (EU) and other national legislation and regulations to understand the potential effect on U.S. forces stationed overseas, as well as the potential for constraints on our access to ports and airfields. We use these opportunities to support international engagement efforts by the Office of the Secretary of Defense (OSD) and to provide technical support to the U.S. Department of State whenever we believe it is important for the U.S. to share its views more formally with other nations and the European Commission (EC). For example, an issue that is particularly important to us is our ability to continue to use Halon fire suppressants in mission-critical applications within the EU. Production of Halon has been eliminated world-wide because it depletes the earth's protective ozone layer, and the U.S. military has established a Halon stockpile to support mission-critical equipment until it can be retrofitted with a suitable substitute.



or retired from service. The EU has passed regulations that not only prohibit production and import of Halons, but also the use of Halons, except for certain critical uses. While all Halon uses by U.S. forces in Europe currently fall within these exemptions, the EC is reviewing these exemptions in their regulations with an eye toward placing phase-out dates on each exemption. We have been working closely with OSD staff and our NATO partners to provide information to the EC on our uses of Halon, our plans to eliminate them, and their importance for ensuring collective security by maintaining combat capability and peacetime safety.

nization is a group dedicated to afloat environment protection—the Maritime Capabilities Group 7 (MCG/7) on Maritime Environmental Protection (MEP). This group has been in existence for 15 years and continues to be the premier forum for the exchange of information on MEP requirements, technology, systems and equipment. MCG/7 meets twice a year and sponsors technical workshops on specific topics of interest to the 13 NATO and PfP navies participating. Because of the importance of MEP to the navies of the world, Australia has also been approved by NATO to participate in the work of the MCG/7. The Chief of Naval

Key to our international cooperation efforts is enhancing our understanding of the environmental protection regulatory regime of foreign nations.

We also enhance our understanding of environmental protection policies, requirements, and technical solutions through bilateral military to military information exchange programs, multilateral military meetings, and NATO forums. Bilateral meetings are often conducted under Information Exchange Agreements for technical matters under the cognizance of the Naval Sea Systems Command (NAVSEA). At the policy level, we support the Navy Secretariat and OSD through participation in bilateral and multilateral military cooperation efforts. We integrate this information with our policy and technical expertise to support the Navy Component Commander and the Combatant Commander in their Theater Security Cooperation (TSC) initiatives. Environmental protection and OHS contingency planning and response are especially useful TSC tools to build capacity in small developing nations.

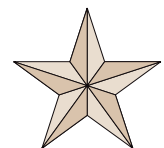
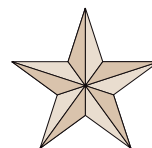
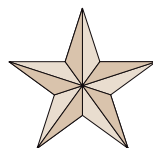
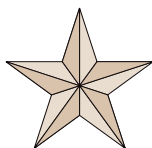
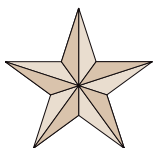
NATO

NATO is a complex organization that addresses the political and military issues of the Alliance. Within this structure, the Conference of National Armaments Directors (CNAD) focuses on developing and procuring military equipment that meets requirements and supports standardization and interoperability across the Alliance. Within the CNAD structure, naval material requirements are addressed by the NATO Naval Armaments Group (NNAG). Within the NNAG orga-

Operations Environmental Readiness Division staff provided the MCG/7 Chairman for many years and still heads the U.S. delegation coordinating the technical information with NAVSEA. As with the U.S. Navy, the other NATO/PfP navies and the Australian Navy share a common MEP strategy.

MEP Strategy

International environmental protection requirements are increasing in scope and stringency. International treaties have been negotiated through the Maritime Environmental Protection Committee (MEPC) of the International Maritime Organization (IMO) of the United Nations and address ship-board solid and liquid wastes, anti-fouling coatings, and ballast water. When ratified by the U.S., implementing laws are passed by the Congress and regulations are then promulgated by the appropriate agency, typically the U.S. Coast Guard (USCG). Because of the uniqueness of navy ships, warships, naval auxiliaries, and other public vessels not in commercial service, they are normally exempt from treaty requirements; “however, each Party shall ensure by the adoption of appropriate measures not impairing the operation or operational capabilities of such ships owned or operated by it, that such ships act in a manner consistent, so far as is reasonable and practicable, with the present Convention.” The NATO navies exchange information on treaties in negoti-



ation in order to develop a shared view on the requirements and technical ability to achieve the treaty objectives. Following this, our national delegations to IMO negotiate the best possible treaty language. We then work within MCG/7 to determine the management practices and technical means to achieve measures consistent with the treaty, as far as reasonable and practicable, while enhancing standardization and interoperability among our navies. We have developed a NATO Standardization Agreement (STANAG) that ensures interoperability of shipboard liquid waste offload connections and shore reception facilities throughout the Alliance. We have shared policies, procedures, and technology to achieve reasonable and practicable compliance with international standards. To this end, MCG/7 sponsors technical workshops to address future requirements, understand the policy, procedural, technical, and administrative impacts, and propose a strategy to acquire affordable measures that are consistent with international standards and that do not adversely impact ship operations or operational capabilities.

understanding of the issues provided by the representatives of our allies. As a result of the technical workshop, MCG/7 formed a Virtual Team of Experts on Ballast Water and Sediments Management (VTE-BWSM) to further study the issue and assess the impacts on NATO/PIF navies.

VTE-BWSM

MCG/7 proposed establishing a VTE-BWSM to the NNAG after the April 2006 technical workshop to assess the impact of the Ballast Water Management Convention on NATO/PIF/Australian navies and identify reasonable, practicable, and affordable mechanisms to achieve measures consistent with the Convention standards. This effort is being led by my staff with support from NAVSEA and NRLKW. We are assembling the current policies and future policy aspirations of the participants; identifying the ship classes and future building programs that may be affected; and conducting a survey of ballast water treatment systems

Ballast water and sediment management and the prevention of the introduction of invasive species are a critical issue for the navies participating in MCG/7.

Technical Workshops

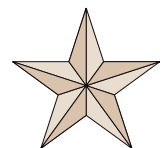
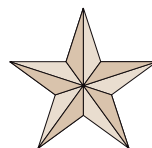
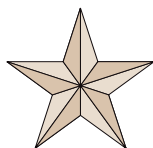
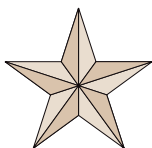
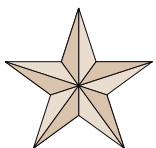
The most recent technical workshop was held in April 2006 at the Navy Research Laboratory in Key West, FL (NRLKW) and concentrated on the recent Ballast Water Management Convention. Ballast water and sediment management and the prevention of the introduction of invasive species are a critical issue for the navies participating in MCG/7. NRLKW provided the perfect venue for this meeting as they operate the only full scale ballast water test facility in the U.S. The test facility is fully instrumented and is designed to meet the requirements of the U.S. Environmental Protection Agency's Environmental Technology Verification (ETV) program. The ETV program is designed to test a manufacturer's system and equipment and validate that they perform to the manufacturer's claims. In this case, the ETV project is jointly funded and administered by the USCG. I personally attended this workshop and was impressed by the level of expertise and

that may be commercially available to meet the international performance standard. Work is currently underway with the report expected to be completed in April 2007.

Summary

The U.S. Navy is not alone in facing the challenges of identifying and implementing reasonable, practicable and affordable measures that do not adversely affect operations or operational requirements. The public vessel exemptions contained in the international treaties are enablers to meeting environmental protection requirements while preserving our ability to train and operate worldwide. We leverage our knowledge, understanding and expertise, as well as that of our friends and allies, to stay ahead of the bow wave and protect our operational freedoms domestically and overseas. 🇺🇸

Rear Admiral James A. Symonds
Director, Environmental Readiness Division





2007 CURRENTS CALENDAR HIGHLIGHTS SOME OF THE BEST OF THE MAGAZINE

Each year, Currents magazine publishes a calendar to highlight the great environmental work being done around the Fleet. This year we resurrect “Some of the Best of Currents.”

While you have given us many more great stories than we can fit into 12 months, our selected projects are a real tribute to the complexity and commitment of your environmental protection and management efforts. Here is a selection of the Currents stories highlighted in our 2007 calendar:

- The Navy’s New Ships-to-Reef Program: Teaming Up to Make Reefs From Decommissioned Ships
- Navy Region Northwest Implements Award-Winning Regionalized Spill Prevention & Response: Collaborations Result

in Significant Reductions in Oil Spills & Better Management Practices

- Military Installations Threatened by Invasive Species: New Report Says Exotic Plants & Animals Impair Military Operations, Put Natural Heritage In Danger
- Fire Is Charleston’s Friend: Weapons Station Using Prescribed Fire to Manage Natural Resources
- Rare Turtles & Backhoes Balance Conflicting Environmental Needs: South Weymouth Conducting Successful Site Remediation While Protecting Rare Species
- Bobcats & Eagles & Bats, Oh My!: Crane’s Forests Provide Habitat & Generate Financial Resources for the Navy

If you subscribe to the magazine, you should have already received your 2007 calendar. If you are not a subscriber, contact Margaret Anderson, our distribution manager, at margaret.anderson1@navy.mil or 904-317-2039 to receive your own copy of the calendar, request additional copies, and sign up for Currents.

We hope that “Some of the Best of Currents” helps to inspire your best work in 2007 and beyond.

2007 calendar



Forging Ahead with AFV Demos & Fleet Integration

In today's petroleum-challenged world, the Department of Navy (DON) has re-energized its alternative fuel programs with new policy, fleet integration, and new technology demonstrations.

Recent events in the Middle East and Central America and national disasters like the hurricanes of the summer of 2005 underscored the decreasing reliability of fuel supplies. In addition, China's economic expansion has increased demand for petroleum across the globe. So continued progress in alternative energy sources is more important than ever.

Fueling THE Navy

in a Petroleum-Challenged World



President Bush has called for federal agencies' support to reduce petroleum consumption. Then-Defense Secretary Donald Rumsfeld had, in turn, directed the Pentagon to explore a wide range of energy alternatives and fuel efficiency efforts to reduce the military's reliance on the oil necessary to power its aircraft, ground vehicles and non-nuclear ships. The Honorable BJ Penn, Assistant Secretary of the Navy (Installations and Environment) (ASN (I&E)), has identified steps to further reduce petroleum in vehicles in a 14 November 2005 Energy Conservation memo.

DON has re-energized its alternative fuel programs with new policy, fleet integration, and new technology demonstrations.

In addition to meeting the mandates in the Energy Policy Act (EPACT) of 2005 and Executive Order (E.O.) 13149, the Memo sets new goals for fuel efficiency and phase-in of neighborhood electric vehicles. It also calls for studying the expanded use of biodiesel for new applications to build on the success of on-road administrative vehicles programs.

In addition to the sections of the memo that address shore installation reduction actions, the ASN (I&E)'s memo established the following five goals for vehicle emission reductions across the Navy:

1. Biodiesel

Increase DON use of biodiesel (B-20) fuel by:

- Implementing the January 2005 ASN (I&E) guidance requiring the use of only B-20 fuel in all non-deployable, non-emergency diesel vehicles.
- Testing the use of B-20 biodiesel fuel beginning in 2007 for 12–24 months in at least four geographically separated fleets of non-deployed tactical vehicles and support equipment.

2. Fuel Catalysts

Install fuel catalysts on gasoline and diesel powered automotive and construction equipment.

3. Hybrid/Fuel Efficient Vehicles

Improve vehicle fuel efficiency by:

- Complying with Executive Order 13149 requirements to increase the average U.S. Environmental Protection Agency (EPA) fuel economy ratings of passenger cars and light duty trucks by three miles per gallon (mpg) compared to the 1999 baseline. Additionally, the average fuel economy ratings should be four mpg higher than the baseline by 2007, six mpg higher than the baseline by 2009, and eight mpg higher than the baseline by 2011.
- Purchasing hybrid electric light duty trucks beginning in FY06 for fleet uses not required to comply with EPACT requirements to be Alternative Fuel Vehicles (AFV) (i.e., for fleets outside of large metropolitan areas).

Demonstrating NEW FUELS

For some perspective on the Navy's efforts to demonstrate the use of new alternatives to petroleum-based fuels, read our article entitled,

"Demonstrating New Fuels: Navy Finding Sound Alternatives to Petroleum-Based Fuels," from the fall 2004 issue of *Currents*.

You can browse the *Currents* archives via the Naval Air Systems Command's environmental web site at www.enviro-navair.navy.mil.

Currents is also available on the Defense Environmental Network & Information eXchange at www.denix.osd.mil through the "Public Menu" and the "Publications>Navy" link.



The Basics About EXECUTIVE ORDER 13149

DATE

21 April 2000

NAME

Greening the Government Through Federal Fleet and Transportation Efficiency

PREAMBLE

The purpose of this order is to ensure that the federal government exercises leadership in the reduction of petroleum consumption through improvements in fleet fuel efficiency and the use of AFUs and alternative fuels. Reduced petroleum use and the displacement of petroleum by alternative fuels will help promote markets for more alternative fuel and fuel efficient vehicles, encourage new technologies, enhance the United States' energy self-sufficiency and security, and ensure a healthier environment through the reduction of greenhouse gases and other pollutants in the atmosphere.

GOALS

Reduced Petroleum Fuel Consumption

Each agency operating 20 or more motor vehicles within the United States shall reduce its entire vehicle fleet's annual petroleum consumption by at least 20 percent by the end of FY05, compared with FY 1999 petroleum consumption levels.

Performance Strategies

Agencies have numerous options for developing a strategy to meet the petroleum reduction levels established in section 201 of this order. Measures include: the use of alternative fuels in light, medium, and heavy-duty vehicles; the acquisition of vehicles

with higher fuel economy, including hybrid vehicles; the substitution of cars for light trucks; an increase in vehicle load factors; a decrease in vehicle miles traveled; and a decrease in fleet size. Each agency will need a strategy that includes most, if not all, of these measures, but can develop a strategy that fits its unique fleet configuration and mission requirements. As part of the strategy, each agency should attempt to accelerate the introduction of vehicles meeting Tier 2 standards. Where feasible, agencies should also consider procurement of innovative vehicles, such as hybrid electric vehicles, capable of large improvements in fuel economy. The strategy should also attempt to minimize costs in achieving the objectives of this order. In developing its strategy, each agency shall include the following:

- **AFU Acquisition and Use of Alternative Fuels**
Each agency shall fulfill the acquisition requirements for AFUs established by section 303 of the Energy Policy Act of 1992. Agencies shall use alternative fuels to meet a majority of the fuel requirements of those motor vehicles by the end of FY 2005. Section 402 of this order addresses related issues of alternative fuel infrastructure availability and the ability to track alternative fuel usage data; and
- **Acquisition of Higher Fuel Economy Vehicles**
Agencies shall increase the average EPA fuel economy rating of passenger cars and light trucks acquired by at least one mpg by the end of FY02 and at least three mpg by the end of FY05 compared to FY 1999 acquisitions.

Source: Council on Environmental Quality web site (www.nepa.gov)



Fleet of biodiesel vehicles.

4. Alternative Fuels in Dual Fuel Vehicles

Mandate the use of alternative fuels in dual fuel vehicles by complying with 2005 EPACT requirements regarding mandatory use of alternative fuels in all dual- and flex-fuel vehicles.

5. Neighborhood Vehicles

Comply with the following targets for replacing a portion of the cars and light trucks used for intra-installation transportation of people, supplies, and equipment with Neighborhood Vehicles (NV) so that NVs account for:

- Three percent of total owned car and light truck inventory by the end of Fiscal Year (FY) 06,
- Four percent of total vehicle inventory by the end of FY07,
- Five percent of total vehicle inventory by the end of FY08,
- Six percent of total vehicle inventory by the end of FY09, and
- Seven percent of total vehicle inventory by the end of FY10 and beyond.

Deputy Assistant Secretary of the Navy (DASN) for the Environment, Donald R. Schregardus expressed support for the Navy

and Marines AFV programs. "We strongly support and encourage the AFV programs," he said. "They have benefits for all the Services. The Navy and Marines have done an outstanding job of vehicle and infrastructure implementation."

Both the Navy and Marine Corps have successfully integrated alternative fuel programs into their fleets and fuel supply infrastructure, demonstrated by the White House Closing the Circle (CTC) awards received in the past two years. Personnel from the Naval Station (NAVSTA) Great Lakes, IL won the

The ENERGY POLICY ACT of 2005

For additional insights into the Navy's requirements to meet key mandates from EPACT 2005 including increased energy efficiency and renewable energy requirements, read our article entitled, "The Energy Policy Act of 2005 & Its Effect on the Navy: Act Lays the Groundwork for Development of New Resources, Technologies & Conservation," in the summer 2006 issue of *Currents*.



2006 CTC AWARD

For more information about NAVSTA Great Lake's 2006 CTC award, read our article entitled, "Closing the Circle with White House Awards: Navy Gets Nods for Sustainable Design & Alternative Fuels" on page 38 of this issue of Currents.

Alternative Fuel and Fuel Conservation in Transportation award in 2006. In addition to using E-85 (85 percent ethanol fuel) in 162 flex fuel vehicles and installing a new compressed natural gas fueling station, they are laying the groundwork for a new biodiesel program with a new fueling facility design in the works. NAVSTA Great Lakes personnel have also implemented transportation efficiency programs that have reduced fuel use by 31,000 gallons per year. One of the programs includes a shuttle program that transports 500 personnel each day.

The Marine Corps won a CTC award in 2005. Efforts leading to this award include exemplary AFV program statistics, as well as progressive programs in biodiesel and electric drive vehicles. As was stated in our sidebar entitled, "The Basics About Executive Order 13149," this E. O. required federal agencies to reduce fleet petroleum use by 20 percent by the end of FY 2005 when compared with FY 1999 petroleum consumption levels. In 2002, the Marine Corps exceeded this requirement by reducing their petroleum fuel use by 24.5 percent—three years ahead of the 2005 mandate. During FY04, the Marine Corps had a 27.5 percent fuel reduction and a 243 percent compliance with EPACT, using more than 1.2 million gallons of biodiesel. The Marine Corps continues to increase the fleet of neighborhood electric vehicles at its installations and is purchasing hybrids for its recruiting force and its centrally fueled fleets. The Marine Corps is also active in hydrogen-powered fuel cell vehicle use. Tom Smallwood, the Alternative Fuel Program Manager at Marine Corps Headquarters stated, "I am very proud of the achievements of the Marine Corps in all areas of the AFV world".

In one of the more innovative heavy equipment applications, Naval Surface Warfare Center (NSWC) Crane, IN has been using biodiesel to power the Navy's fleet of locomotives in support of ordnance operations for Crane's Army Ammunition Activity. Crane plans to increase the use of biodiesel to all diesel-powered equipment operated at Crane.



Naval Surface Warfare Center, Crane
biodiesel locomotive.

In the Northwest region, personnel from Naval Base Kitsap (NBK)—Bangor, WA are installing a biodiesel fuel tank for use in their vehicles and equipment. They have procured 74 vehicles that will utilize E-85 once an appropriate tank is installed. Vehicles can be transferred within the regional bases to increase the inventory of E-85 vehicles and increase usage from the Bangor fuel station after installation. NBK—Bremerton has 94 propane vehicles, 138 electric scooters, and 98 E-85 vehicles with no source of ethanol presently available. They are considering installation or retrofit of an existing fuel tank to E-85. They also hope to convert an existing diesel tank to B-20 (20 percent biodiesel, 80 percent diesel mix) for use in their vehicles and equipment. The Manchester Fuel Depot plans to install an E-85 fuel tank in FY07 to add to its existing biodiesel and electric vehicle programs.

In 2002, the Marine Corps exceeded the E.O. 13149 requirement by reducing their petroleum fuel use by 24.5 percent—three years ahead of the 2005 mandate.

Battery technology developments have led to a renewed interest in on-road electric vehicles and their potential to play a larger transportation role in agency fleets. The Navy's Morale, Welfare and Recreation Division of Commander, Navy Installations Command (CNIC) has teamed with Hybrid Technologies to test lithium battery powered systems at four separate locations. At the Naval Air Station (NAS) Jacksonville, FL test site, a battery powered PT Cruiser will provide clean transportation for the Navy Community Support Program staff and the facility maintenance team. This project falls under CNIC's Community Support Program and targets the examination and potential application of several types of AFVs.

New infrastructure will enable DON to ramp up its use of biofuels. In 2005, the Naval Facilities Engineering Command (NAVFAC) Southwest expanded biodiesel use to nearly all fleets in the region. The Navy Exchange Service Command (NEXCOM), through coordination with the NAVFAC Mid Atlantic Transportation Office, recently opened up two

new biodiesel pumps at Naval Station Norfolk and NAS Oceana. NAVFAC Southeast is also investigating ways to partner with NEXCOM for use of biodiesel, with two sites currently on-line at NAS Meridian, MS and Weapon Station Charleston, SC. Marine Corps Base (MCB) Quantico, VA is building a multi-fuel station that will sell B-20, compressed natural gas, and E-85.

For more insights into NEXCOM's efforts to implement alternative fuel solutions across its infrastructure, see our sidebars entitled, "Hampton Road Exchanges Now Offer Biodiesel: New Pumps Open for Business in Norfolk & Oceana" and "NEXCOM Looking at Energy Initiatives: Another Way to Save Sailors Money."

Ethanol use is also increasing with the installation of fueling new stations on the east coast. Two new tanks were installed in the Hampton Roads (VA) area at Naval Shipyard Portsmouth and Weapon Station Yorktown. In North Carolina, the Marine Corps installed tanks at Cherry Point and Camp Lejeune. Continued progress depends on a few factors. In California, for example, DON is awaiting approval of a certified vapor recovery system, and has volunteered to support this effort. Implementation in Hawaii depends on establishing a Defense Energy Support Center B-20 contract with a local supplier who meets the minimum fuel quality testing requirements.



Electric car recharging.

Hampton Road Exchanges **NOW OFFER BIODIESEL**

New Pumps Open for Business in Norfolk & Oceana

The Navy Exchange Service Command (NEXCOM), through coordination with the Regional Transportation Office, has opened two new biodiesel fuel pumps at Navy Exchange (NEX) gas stations at Naval Station (NS) Norfolk and Naval Air Station Oceana, VA. The two Biodiesel 20 (B20) pumps, which opened for business on 6 June and 19 June 2006, respectively, are open seven days a week, offering the fuel for sale to the Fleet and the general public.

"The biodiesel pumps are a continuation of NEXCOM's efforts to help the Department of Defense and Navy meet its objective of reducing the reliance on petroleum and helps us meet the requirements of Executive Order 13149," said Larry Boone, NEXCOM's Automotive Program Manager. "The order ensures the Federal government exercises leadership in the reduction of petroleum consumption through improvements in Fleet fuel efficiency and the use of alternative fuels. The Navy Exchange is a leader in offering these fuel alternatives. Through this initiative, we are exceeding both our customers' and the Navy's expectations."

B20 fuel is manufactured from biodegradable substances, such as vegetable oils, recycled cooking grease or animal fats. The B20 fuel offered at NEX gas stations is soy-based and made from a mixture of 20 percent biodiesel and 80 percent regular petroleum-based diesel. "Any diesel engine can use biodiesel fuel," said Larry Boone. "It doesn't need converting. However, check your car's owners manual or consult your car manufacturer about biodiesel blends when considering the use of biodiesel."

While biodiesel costs a little more at the pump, it is ultimately better for the environment and reduces the country's dependency on petroleum. When used on a wide scale, biodiesel fuel would essentially cut down petroleum usage by 20 percent, a marked decrease.

The Navy Exchange also operates alternative fuels at NEX Quarters K near the Pentagon, NEX Jacksonville, FL, and NEX Mayport, FL. These facilities offer alternative fuels to anyone who can enter the base. Even though the Navy Exchange restricts shop-

ping privileges to only active duty, retirees and their family members, the Armed Service Exchange Regulations grants military exchanges the authority to sell alternative fuels to the public in unison with the government's lead on the use of alternative fuels.



NS Norfolk now offers biodiesel 20 as an alternate to regular gasoline.

Photo by Larry Boone, NEXCOM Automotive Branch Manager

For additional information, check out the National Biodiesel Board website at www.biodiesel.org.

CONTACT

Kristine Sturkie
Navy Exchange Service Command
757-631-3648
DSN: 757-631-3648
kristine_sturkie@nexnet.navy.mil

NEXCOM Looking at ENERGY INITIATIVES

Another Way to Save Sailors Money

As good stewards of the Sailors' dollars, the Navy Exchange Service Command (NEXCOM) is always looking to reduce the energy consumption at the NEXCOM's stores and distribution centers.

According to Harry "Mickey" Smith, NEXCOM's Energy Engineer, there are a number of initiatives that can be accomplished that will save hundreds of thousands of dollars each year. "I've identified 47 existing Navy Exchange facilities with annual electrical bills exceeding \$100,000," said Smith. "There are some very simple things we can do to reduce energy consumption and save money at the same time."

Two Navy Exchanges have already completed energy retrofits, which include installing power factor correction devices on air conditioning units and devices on light fixtures to reduce voltage and lighting levels. Since its energy retrofit was completed in June 2005, Navy Exchange Norfolk, VA, has seen a 20 percent or \$55,000 per year savings. Navy Exchange Oceana, VA, which received its energy retrofit in June 2006,

expects to see a \$31,800 per year or 12 percent minimum savings.

Smith is also working with two of NEXCOM's distribution centers to see how energy consumption can be reduced. In the Pensacola, FL, distribution center warehouse, Smith estimates a 32.9 percent savings or \$115,390 per year. Replacing nearly 500 fluorescent fixtures with fixtures that use six fluorescent tubes and have a higher lamp life for half the cost will achieve these savings. In the Chino, CA, distribution center warehouse, over 400 light fixtures are also being replaced. In addition, since the distribution center has a number of skylights, light fixtures with photocells are being installed so that during the day, the lights will automatically turn off. These changes should bring a 30 percent savings of around \$87,900 per year.

"Based on a five-year plan, we project a savings range of 15 to 20 percent," said Smith. "So, if the average electrical bill for a Navy

Exchange facility is \$200,000 per year. That equates to an average savings of \$1,650,000 per year for the 47 Navy Exchange facilities. That's a lot of money we can return to our bottom line and ultimately give back to our customers in the form of dividends to Morale, Welfare and Recreation quality of life programs."

The Basics About NEXCOM

NEXCOM is headquarters for the worldwide Navy Exchange System. Its mission is to provide authorized customers quality goods and services at a savings and to support quality of life programs for active duty military, retirees, reservists and their families. Navy Exchanges are run as non-appropriated fund activities, that is, they are self-sufficient and do not receive appropriated or taxpayer dollars. NEXCOM is responsible for the oversight of 107 Navy Exchange complexes with 344 stores worldwide, 45 Navy Lodges, ship's stores and the Uniform Program Management Office. Visit the Navy Exchange website at <http://www.navy-nex.com/>.

CONTACT


Kristine Sturkie
Navy Exchange Service Command
757-631-3648
DSN: 757-631-3648
kristine_sturkie@nexnet.navy.mil



Installation of the first of five modular components for the Naval Base Ventura County biodiesel production facility. This full-scale commercial unit, being installed by Biodiesel Industries, will be capable of producing up to ten million gallons of biodiesel fuel per year. (3 October 2006)

DON is also pursuing the advancement of biodiesel fuel and infrastructure technologies through testing and evaluation programs. For example, the Naval Facilities Engineering Service Center (NFESC) is overseeing a modular biodiesel production project at Port Hueneme, CA. In addition to investigating ways to opti-

mize the biodiesel production, NFESC personnel conducted testing to ensure the biodiesel fuel product meets or exceeds current standards. This project is transitioning to a commercial scale demonstration. During this phase, the pilot plant will be replaced with a full-scale commercial unit capable of producing up to ten million gallons per year.



Several biodiesel operational issues, such as increased fuel filter and fuel injector change outs, have been identified and resolved. Many issues seem to emanate from less than optimum fuel quality. These issues are being addressed through testing and evaluation with hopes of developing a joint test method for the Department of Defense (DoD). DON is working with the Air Force and Army to investigate issues and develop solutions. The rapid growth in use of biodiesel has expanded the number of suppliers and the fuel consistency has been affected. Users should ensure that suppliers are meeting or exceeding all fuel quality tests prior to use. NFESC is investigating the expansion of the use of biodiesel fuel to tactical, non-deployed vehicles and equipment used for training.

Naval fleets in the Southwest have led the way in biodiesel usage. DON's largest biodiesel user region recently doubled its B-20 consumption to 1.6 million gallons for 1,533 vehicles.

Naval fleets in the Southwest have the led the way in biodiesel usage. DON's largest biodiesel user region recently doubled its B-20 consumption to 1.6 million gallons for 1,533 vehicles. The region identified and resolved numerous operational issues. Lessons learned include the need for increased scrutiny of fuel quality and the need for new technologies such as storage tank filtration to increase the quality and storage life of biodiesel. NAVFAC Southwest is also working with the Defense Logistics Agency to secure funding for installation of an E-85 and a B-20 fuel tank in FY07.


Progress has also been made on the hydrogen refueling project at MCB Camp Pendleton, CA that is being hosted by the Marine Corps Southwest Region Fleet Transportation. As directed, the project team completed an environ-

PAA Program Sponsors EXPANSION OF BIODIESEL to Tactical, Non-Deployed Vehicles

The Pollution Abatement Ashore program provided funding to leverage a project already underway via the Environmental Security Technology Certification Program (ESTCP). This ESTCP project seeks to identify the technical and integration challenges associated with the use of biodiesel fuels in tactical vehicles. The data collected will help principal investigators to gather user concerns and analyze existing information to focus the ESTCP proposal on the most critical issues surrounding the use of biodiesel in tactical vehicles.



mental assessment to study all of the potential impacts. After signing a Cooperative Research and Development Agreement in January 2006, the project team has awarded procurements and is in the site preparation phase. The ESTCP office provided funds for the DoD portion of equipment. The Marine Corps has also funded an upgrade to a nearby garage facility to permit safe maintenance and repairs on hydrogen vehicles. The fuel station is slated to open by early 2007.

The future of alternative fuel usage in the Navy looks bright as continued efforts to increase usage, update delivery systems and improve quality help to decrease our dependence on foreign oil in this petroleum-challenged world. As DASN-E Donald R. Schregardus stated, "Alternative fuel reduces emissions and diversifies our energy supply. It's a winner for both our energy and environmental programs." 

CONTACT

Dave Cook
Naval Facilities Engineering Service Center
805-982-3477
DSN: 551-3477
david.j.cook@navy.mil

Marine Mammals Web Site Online

SITE INCLUDES INFORMATION ON SONAR & ITS EFFECT ON MARINE MAMMALS

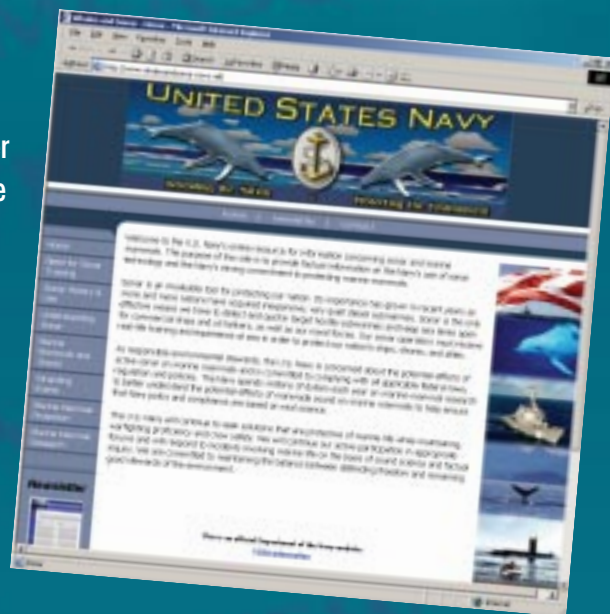
The Navy has a web site that includes information on manmade sound (sonar) and its effects on marine mammals.

The Navy has shared its operating environment with marine mammals for over 200 years, and is acutely aware of its responsibility to be good stewards of the ocean and its inhabitants as Navy personnel train and operate at sea. In addition to spending nearly \$10 million per year on research to understand how manmade sound affects marine mammals, the Navy employs protective measures to minimize potential effects on marine mammals when conducting sonar training at sea.

Other initiatives include a Navy Marine Mammal Working Group that develops communication strategies and examines legal and science issues pertaining to marine mammals; senior-level discussions to ensure consistent marine mammal policy Navy-wide; improved reporting procedures that provide rapid, fact-based assessments of potential Navy involvement in marine mammal strikes or strandings; and software tools that assist warfighters in avoiding marine mammal concentration areas.

In order to provide accurate, accessible information about its commitment to marine mammals, the Navy maintains a web site at www.whalesandsonar.navy.mil. The site includes pages summarizing the need for realistic training; background information on sonar and the effects of manmade sound; Navy marine mammal research and protection initiatives; and information on strandings. Navy environmental policy documents, official reports, and links to marine science-oriented web sites are also available on the site.

Contact: Kenneth Hess, EG&G Technical Services, Inc., 703-418-3417, DSN: 333-9434, khess@egginc.com



www.whalesandsonar.navy.mil

Florida Partnerships

Protect the Environment

Lands Adjacent to Outlying Field Whitehouse Preserved

A partnership between the state of Florida, the city of Jacksonville and the Naval Air Station (NAS) Jacksonville, FL is exercising Congressional authority to preserve habitat and reduce encroachment on military operations.

Section 2684a of United States Code Title 10 authorizes the Department of Defense (DoD) to form partnerships with states and non-profit conservation organizations for the dual purpose of environmental protection and national defense. Florida was the first state to partner with the DoD under this program.

A recent example of this program is the acquisition by Florida, the city of Jacksonville and NAS Jacksonville of more than 1,650 acres of environmentally sensitive lands adjacent to NAS Jacksonville Outlying Landing Field (OLF) Whitehouse.



The gopher tortoise (*Gopherus polyphemus*) thrives in the sandy soil near the runway and Norfolk Southern property.



Northeast Florida Timberlands—Norfolk Southern.

The lands surrounding OLF Whitehouse are rich in biodiversity, with mesic flatwoods, cypress and hardwood swamps and sandhills. The diverse terrain provides habitat for many threatened and endangered plant and wildlife species including the gopher tortoise, Florida burrowing owl, peregrine falcon, bald eagle and Florida black bear. Development in the area could interfere with the long-term survival of these species.

Additionally, acquiring the lands surrounding OLF Whitehouse will help prevent encroachment on Navy oper-



The C-2A Greyhound is the principal aircraft for carrier on-board delivery of personnel, parts, and equipment. The Greyhound is among the aircraft using OLF Whitehouse for Fleet carrier landing practice prior to deployment on aircraft carriers.

U.S. Navy photo by Mass Communication Specialist Seaman Joshua Wayne LeGrand

ations. Navy pilots use OLF Whitehouse for Fleet carrier landing practice prior to deployment on aircraft carriers. This requires low-level flyways to simulate approaches to aircraft carriers. Preventing encroachment serves two critical ends: it helps to maintain the nation's military readiness and it creates a safer environment for all citizens by ensuring that necessary training grounds remain undeveloped and secure, and that crash safety zones are maintained.

The initial catalyst for acquiring the buffer lands around OLF Whitehouse was the Preservation Project Jacksonville. The city of Jacksonville began buying large tracts of environmentally sensitive lands around OLF Whitehouse in 2001. In this recent partnership with NAS Jacksonville, the city committed more than five million dollars to the 1,650-acre OLF Whitehouse acquisition (the acquisition area is also referred to as Norfolk Southern). The state will contribute to the acquisition via its 10-year, three billion dollar water and land conservation program, Florida Forever, which is managed by the Florida Department of Environmental Protection (DEP).

The acreage preserved in the NAS Jacksonville partnership will help to connect lands preserved through other past and planned efforts, providing a conservation corridor. Nearly 10,000 additional acres surrounding OLF Whitehouse also are targeted for acquisition as part of a broader project, the Northeast Florida Timberlands and Watershed Reserve Florida Forever Project. That project encompasses more than 143,000 acres and spans four northeastern Florida counties—Nassau, Duval, Clay and Putnam.

Lands surrounding OLF Whitehouse provide habitat for many threatened and endangered species including the peregrine falcon.

Photo by Craig Koppie, U.S. Fish and Wildlife Service





The F/A-18 Hornet provides Carrier Strike Groups with a strike fighter that has increased range, endurance and ordnance carrying capabilities. Hornet pilots use the OLF Whitehouse to practice landings prior to carrier deployment.

U.S. Navy Photo by Photographer's Mate 3rd Class Stacey Hines

THE BASICS ABOUT AN OLF

When is an OLF not an OLF? When it's an NAS, MCAS, or NAF.

As it turns out, an OLF is just one of the many different types of airfields in the Navy. Here's a summary of airfield types and their associated missions extracted from the Military Handbook on Airfield Geometric Design (MIL-HDBK-1021/1, dated 29 June 1990).

Navy and Marine Corps airfields are classified by mission as air stations, air facilities, auxiliary landing fields, or outlying (landing) fields. Airfield layout is determined by the mission and number and types of supported activities. Airfields also may be categorized by the types of aircraft for which facilities are provided.

Airfield Type	Description
Air Stations	Naval Air Stations (NAS) and Marine Corps Air Stations (MCAS) may be fleet support air stations; training command air stations; research, development, test, and special air stations; or overseas air stations.
Master Jet Air Station	A Master Jet Air Station is the parent NAS or MCAS within a regional fleet support command which has under its operational control a minimum of two satellite installations for such activities as instrument training, fleet carrier landing practice, and ordnance training.
Air Facilities	Naval Air Facilities (NAF) and Marine Corps Air Facilities (MCAF) may be for fleet support or for some special requirement such as Marine Corps rotary-wing observation and transport aircraft or support of research, development, test, and special missions.
Other Air Installations	Auxiliary landing fields may be either Navy (NALF) or Marine Corps (MCALF), and provide only minimum support. Outlying fields (also known as Outlying Landing Fields (OLF)), either Navy (NOLF) or Marine Corps (MCOLF), generally provide only a landing area.



T-45 Goshawks are used for both intermediate and advanced portions of both the Navy and Marine Corps pilot training programs for carrier aviation and tactical strike-mission instruction. T-45 pilots use the OLF Whitehouse for Fleet carrier landing practice prior to deployment on aircraft carriers.

U.S. Navy photo by Photographer's Mate 3rd Class J. Scott Campbell

In this partnership the Department of the Navy purchased a restrictive covenant on the property for two million dollars once the state's acquisition was completed in August 2006. Restrictions include barring development, setting height restrictions for trees and towers, limiting the use of motorized vehicles and establishing lighting limitations. Otherwise incompatible development has the potential to obstruct low-level flyways, hindering realistic military testing and training.

This partnership exemplifies the state of Florida's efforts to protect environmentally sensitive properties through DoD joint ventures. Along with NAS Jacksonville, DEP has forged agreements with Camp Blanding Joint Training Center Eglin Air Force Base and NAS Whiting Field, including:

- The DEP and the Nature Conservancy's ongoing agreement with the Department of Defense to protect 100

miles of open space, within the Northwest Florida Greenway, stretching from the Apalachicola National Forest and waters of the Gulf of Mexico to benefit Eglin and Tyndall Air Force bases;

- A Camp Blanding Conservation Partnership to protect a three-mile buffer adjacent to the Training Center, preserving environmentally sensitive areas while sustaining existing military lands and providing open space for recreation; and
- An agreement being developed with NAS Whiting Field to protect buffer lands through Florida Forever and Greenways and Trails purchases.

To date, the state has invested more than \$785 million to acquire more than 500,000 acres of land buffering military installations across Florida, protecting natural resources and benefiting military operations. An additional 643,000 acres are slated for acquisition in the upcoming years. ⚓



Bald eagle.
Photo by Steve Hillebrand,
U.S. Fish and Wildlife Service

CONTACTS

Kathalyn Gaither
State of Florida,
Department of Environmental Protection
850-245-2124
kathalyn.gaither@dep.state.fl.us

Captain Chip Dobson
Commanding Officer
Naval Air Station Jacksonville, FL
904-542-2334
DSN: 942-2334
chip.dobson@navy.mil

Navy Environmental Road Show Rolls On

EQ Pelican & Crew Wrap Up 2006 Season

The Chief of Naval Operations Environmental Readiness Division (N45) environmental display made stops in Washington State, Virginia, California, and Florida on the final leg of its outreach mission

for 2006. With a presence at several major events where U.S. Navy ships and/or aircraft were on site and accessible to the public, the N45 outreach team made sure the Navy's environmental stewardship message was part of the mix.

Seattle Seafair is a massive, community-wide event that takes place annually from the second week of July through early August, but Navy activities were concentrated 2 through 7 August 2006. About 7,000 people participated in ship tours on U.S. Navy, Coast Guard, and Royal Canadian Navy ships on Pier 91 from 3 through 6 August, and tens of thousands witnessed Seattle Seafair's Blue Angels air show during the weekend of 5-6 August. Navy Recruiting, Coast Guard Recruiting, the Coast Guard Sea Partners Campaign, and Explosive Ordnance Disposal Mobile Unit (EODMU) 11 Detachment Northwest shared space with the Navy environmental display on Pier 91 and interacted with people waiting in line for the ship tours. EQ Pelican, the Navy's environmental quality mascot, greeted children and families as N45 personnel handed out outreach materials and spoke about the Navy's environmental initiatives.

Back on the east coast, the Navy environmental exhibit stood up at the Naval Air Station (NAS) Oceana Air Show that ran from 8 through 10 September. As expected, the Blue Angels and other flying aircraft demonstrations were the primary focus of attention for the event, but scores of static aircraft displays, specialty hobby vendors (model airplanes, gliders), food vendors, and military commands gave the air show's 267,000 visitors plenty of interesting options on the ground. The N45 team



Members of the Blue Angels flight demonstration team fly a high-speed maneuver.
Official U.S. Navy photo



The USNS MERCY (T-AH 19), shown here during an underway replenishment with the USNS PECOS (T-AO 197), returned to Naval Station San Diego during San Diego Fleet Week on 29 September 2006 following a five-month humanitarian deployment. U.S. Navy photo by Chief Photographer's Mate Edward G. Martens

set up next to the Navy Recruiting display to maximize public exposure and also inform recruiters about Navy environmental programs.

San Diego Fleet Week kicked off in 2006 with ship arrivals at Broadway Pier on 29 September. N45 personnel set up exhibit materials on the pier that day next to the Office of Naval Research booth, where innovative Navy and Marine Corps technology prototypes were on display. The same day, EQ Pelican and a small crew traveled to Naval Station San Diego to provide support during a homecoming reception for the USNS MERCY (T-AH 19). The MERCY, a Military Sealift Command hospital ship, had been on a five-month deployment providing disaster relief and humanitarian assistance in the Philippines, Indonesia, East Timor, and Bangladesh. EQ entertained children, offered free photo opportunities, and gave away environmental book-marks and coloring books during the "down time" between families arriving on base and their loved ones disembarking the ship. During the Sea and

Air Parade and public ship tours on 30 September and 1 October, the full N45 team returned to Broadway Pier and continued the outreach effort. Over 100,000 people are estimated to have participated in San Diego Fleet Week events that weekend.

Five days after N45's participation in San Diego Fleet Week concluded, San Francisco Fleet Week festivities were underway. Blue Angels test flights began in San Francisco on 6 October as N45 personnel began staging equipment near the Navy Recruiting booth on Pier 39, and the San Francisco Parade of Ships took place 7 October. The outreach team provided information and outreach materials to crowds of people visiting Pier 39 prior to and during the Blue Angels shows on the weekend of 7–8 October, and interacted with hundreds more on 9 and 10 October.

Approximately 150,000 people visited Pier 39 that weekend, and as many as 500,000 are estimated to have seen the San Diego Fleet Week air show events.

The final display event for the N45 outreach crew in 2006 was the Blue Angels Homecoming air show at NAS Pensacola, FL. The event started



EQ Pelican, the Navy's environmental quality mascot, poses with the ordnance disposal robot from the EODMU 11 Detachment Northwest.



LCDR Marvin Earles and EQ Pelican hand out coloring books during the USNS MERCY homecoming at Naval Station San Diego on 28 September 2006.



Contractor Bruce McCaffrey, managing editor of *Currents*, describes the plastic waste processor equipment on Navy ships.



Pier 39 visitors snap up free information at the Chief of Naval Operations Environmental Readiness Division display during San Francisco Fleet Week.



LCDR Marvin Earles and public affairs contractor Easter Thompson talk to Seattle Seafair participants about the Navy's environmental programs.

9 November and ran through 11 November. 2006 marked the 60th anniversary of the Blue Angels flight demonstration team, and naval aviators who served on the Blue Angels team in the past returned for the celebration. In addition to "headliner" performances by the Blue Angels, activities included individual and team aerobatic stunt performers, the Red Devils British Army parachute display team, the Black Daggers U.S. Army Special Operations Command Parachute Demonstration Team, pyrotechnic displays, and tactical demonstrations of other Navy aircraft. N45 personnel arranged for booth space near the Naval Reserve booth, Navy Recruiting, and the Navy F/A-18 flight simulator. Once again, EQ Pelican and the team reached air show visitors with copies of *Currents*, Navy environmental posters, fact sheets, and samples of Navy pollution prevention and recycling technology. Nearly 200,000 people attended the event.

N45 personnel plan to launch the spring/summer 2007 environmental outreach season in May. ⚓

CONTACT

Ken Hess
EG&G Technical Services, Inc.
703-418-3417
DSN: 333-9434
khess@egginc.com

NAVAIR to Host Ninth Environmental Exchange

San Diego Selected As Site For Annual Sailor Training & Workshop

The ninth annual Fleet Environmental Information Exchange (EIE) will be held on 24–26 April 2007 in San Diego, CA at a specific location to be determined.

Each year since 1999, the Naval Air Systems Command's (NAVAIR) Program Management Competency's Environmental Programs Department (AIR 1.6) sponsors the Fleet EIE

Technical Sessions at the EIE Open Forum

The schedule for the 2007 EIE includes a series of technical sessions. These sessions provide the assembled Sailors and Marines with an opportunity to speak with a variety of experts about their ongoing maintenance (and environmental) challenges and find appropriate solutions in the following areas:

- Adhesives, Bonding & Sealants
- Aviation Hydraulics/Fluid Contamination
- Composite Repair
- Corrosion Control & Aircraft Cleaning
- Fuel Cells & Tanks, Hoses & Tubes
- Joint Oil Analysis Program/Fuels & Lubricants
- Non-Destructive Inspection
- Pollution Prevention & Support Equipment
- Shelf Life
- Supply/Material Requests & Material Substitutions
- Radomes & Covers
- Bearings



WANTED



SAILORS AND MARINES in Naval Maintenance

to Attend the

NINTH ANNUAL FLEET ENVIRONMENTAL INFORMATION EXCHANGE
24–26 April 2007 • San Diego, CA

Find environmentally friendly solutions to your maintenance challenges.
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Receive valuable environmental training.

For more information contact:

Cindy Webber, NAWC China Lake: 760-939-2060 • DSN: 437-2060 • cynthia.webber@navy.mil
Ebbie Crockett, NAS North Island: 619-545-2010 • DSN: 545-2010 • elizabeth.crockett@navy.mil

To register visit www.enviro-navair.navy.mil.

NAV  AIR

to address the outstanding environmental management needs of aviation maintenance personnel through the timely exchange of advice about approved, innovative maintenance practices and technologies.

The EIE provides Sailors and Marines with an opportunity to discuss their environmental maintenance-related issues with NAVAIR's environmental and acquisition

experts. The primary goal of the EIE is to identify unresolved Fleet environmental needs and provide solutions in real time at the meeting.

To register for the EIE, visit
www.enviro-navair.navy.mil.



Images from the 2006 EIE held at the Naval Amphibious Base Little Creek, Virginia Beach, VA. Over 80 Sailors and Marines received training and insights from a variety of experts from NAVAIR and their colleagues in the Fleet. This year's meeting will be held on 24–26 April in San Diego, CA.



NAVAIR encourages Fleet representatives from all Navy and Marine Corps hazardous material, supply, support equipment, ordnance and corrosion control programs to attend. Military and civilian personnel can register on-line for the EIE and get up-to-date information about the specific location and other relevant information about the meeting at www.enviro-navair.navy.mil. Other interested parties, including contractors, can contact Cindy Webber to register. Registration will also be available on-site. ⚓

Photos by Jon Strasbaugh, Digital Reflections.

CONTACT

Cindy Webber

Naval Air Warfare Center China Lake, CA

760-939-2060

DSN: 437-2060

cynthia.webber@navy.mil

What's Happening in Your World?

DEADLINE FOR SUMMER 2007 ISSUE IS 27 APRIL

What's happening in your world that our readers need to know about? We need to know by Friday, 27 April.

We are already collecting more, great content to fill the pages of our summer 2007 issue. So if you have a story that you want us to consider, you need to submit your final text and images by 27 April.

You can request a copy of our article template by sending an email to Bruce McCaffrey, our Managing Editor, at brucemccaffrey@sbcglobal.net. This template has proven to be a tremendous asset in helping us edit

and track your article submissions. And your chances of being published in *Currents* are dramatically increased if you follow this template. Bruce is available at 773-376-6200 if you have any questions or would like to discuss your story ideas.

We look forward to reading your stories about all the great work you're doing as the Navy's stewards of the environment. The power of your experiences is even greater when you take the time to share them with our readers.

Sustainability Now Featured in Joint Service P2 Library

New Topics Include Sustainable Development & Range Management

A wide range of information on sustainability topics is now available in the Joint Service Pollution Prevention (P2) Technical Library.

Sustainability, including the topics of sustainable development and sustainable operations, is a concept that is receiving greater attention in the Department of Defense (DoD). The Joint Service P2 Technical Library provides links to over 10,000 environmental resources that are relevant to the DoD mission. These resources, which include web links, documents, fact sheets, conference presentations, P2 opportunity data sheets, and other important sources, provide information about interdependent topic areas including:

- Pollution prevention,
- Sustainability issues,
- Sustainable development,
- Range management,
- Green procurement, and
- Environmental Management Systems (EMS).

DoD is emphasizing sustainability as an essential factor in maintaining operations and mission readiness. Sustainability represents the capacity to conduct operations "...in a manner that preserves the resources that are necessary to conduct successful mission operations indefinitely into the future." (Source: Environmental Management Systems and Sustainable Federal Operations, Closing the Circle News, April 2004.) Sustainability is an extension of the proactive P2 and EMS programs already established at joint service installations. These programs emphasize achieving cost-effective environmental protection by avoiding or minimizing problems, rather than reacting to them. The move toward sustainability is a natural progression from P2 and EMS that goes well beyond traditional environmental compliance and management programs to encompass the full range of resources necessary to sustain mission readiness in a framework of environmental stewardship.

Achieving sustainability is a long-term endeavor requiring a systematic approach to continual improvement that encompasses all operations and activities at military installations and

ranges. Sustainability issues are very complex, multi-faceted, and involve overlapping and interdependent aspects of P2, EMS, sustainable development, range management, and green procurement. The Joint Service P2 Technical Library provides comprehensive information on all sustainability aspects.

In particular, the Joint Service P2 Technical Library homepage contains direct links to a number of important federal and DoD sustainability resources, including:

- The Federal Network for Sustainability (www.federalsustainability.org)
- The Air Force Sustainable Operations Guide (www.afcee.brooks.af.mil/products/so/guide/default.asp)
- The United States Army sustainability web site (www.sustainability.army.mil)



More information on sustainability topics is provided below.

Sustainable Development

Sustainable development is often equated with "green building" issues. However, "green building" issues represent only part of the concept. Sustainable development is a comprehensive approach to physical asset and natural resource management that recognizes the interaction and interdependence among mission, the community, and the environment. Sustainable development recognizes that responsible environmental stewardship is necessary to ensure the long-term sustainability of military installations and missions.

Sustainable development resources in the Joint Service P2 Technical Library are organized under the following areas:

- Overviews,
- Energy efficiency and renewable energy,
- Natural resource protection (air, water, land),
- Partnerships/stakeholder relations, and
- Sustainable building design and construction.

Range Management

Sustainable range management is a major aspect of sustainable operations. DoD Directive 4715.11 entitled Environmental and Explosives Safety Management on Operational Ranges within the United States, defines sustainable range management as: "Management of an operational range in a manner that supports national security objectives and maintains the operational readiness of the Armed Forces and ensures the long-term viability of operational ranges while protecting human health and the environment."

(Source: *Environmental and Explosives Safety Management on Operational Ranges Within the United States: Department of Defense Directive 4715.11, 10 May 2004.*)

Sustainable range management represents a major challenge for DoD because the management, maintenance, and sustainability of military training ranges has become increasingly difficult during the past few years. Sustainable range programs, featured in the range management topic area of the Joint Service P2 Technical Library, are organized into the following areas:

- Air and noise pollution,
- Endangered species,
- Land use considerations,
- Munitions lifecycle management, and
- Safety and compliance.

Green Procurement

The Joint Service P2 Technical Library has developed a comprehensive topic area to address a regulatory issue that is impacting the purchasing practices and operations of all joint service installations and federal facilities. This area is the only internet resource based on the September 2004 DoD Green Procurement Strategy promoting environmental stewardship. The resources for this topic are organized under the following seven major categories:

1. Alternative fuels and fuel efficiency,
2. Biobased products,
3. Energy efficient products (energy star and energy efficient stand-by power devices),


4. Environmentally preferable products,
5. Non-ozone depleting substances,
6. Priority chemicals, and
7. Recovered material (recycled-content) products.

Sustainability in Relationship to Pollution Prevention

We encourage you to visit the Joint Service P2 Technical Library site because it:

- Supports progress toward sustainable operations in the present and the future,
- Provides key resources for continual improvement and proactive planning for environmental issues that will impact future operations and missions,
- Makes it easy to find comprehensive information about current, overlapping, and interdependent environmental concerns, and
- Offers a means of sharing information about environmental challenges and the solutions to those challenges.

The Joint Service P2 Technical Library is an inter-service, inter-agency cooperative web site maintained by the Naval Facilities Engineering Service Center. It is not only a valuable and extensive resource for P2 information, but is also a source of information about sustainability and other environmental issues that help DoD installations maintain operations, sustain mission readiness, and enhance their environmental performance. The web site is designed to provide comprehensive, timely, and pertinent resources about issues of vital interest to the DoD environmental community. In support of this mission, the web site plays an important role with respect to providing information on sustainability.

For proven approaches to problem solving and innovative solutions to common environmental challenges, visit the Joint Service P2 Technical Library today (at <http://p2library.nfesc.navy.mil/> or <http://141.156.28.142/index.html>) and while you're there, add it to your bookmarks. 

CONTACT

Charles Sokol
 Naval Facilities Engineering Service Center
 805-982-5318
 DSN: 551-5318
charles.sokol@navy.mil

Storm Water BMP Web Site Is Back Online

Resources Now Available on P2 Technical Library

The storm water Best Management Practices (BMP) decision support tool has found a new home on the Joint Service Pollution Prevention (P2) Technical Library web site (at <http://p2library.nfesc.navy.mil/index.html>).

Personnel from the Naval Facilities Engineering Service Center (NFESC) developed this helpful resource in the summer of 2003, although the site was temporarily unavailable during transition to the Navy and Marine Corps Intranet.

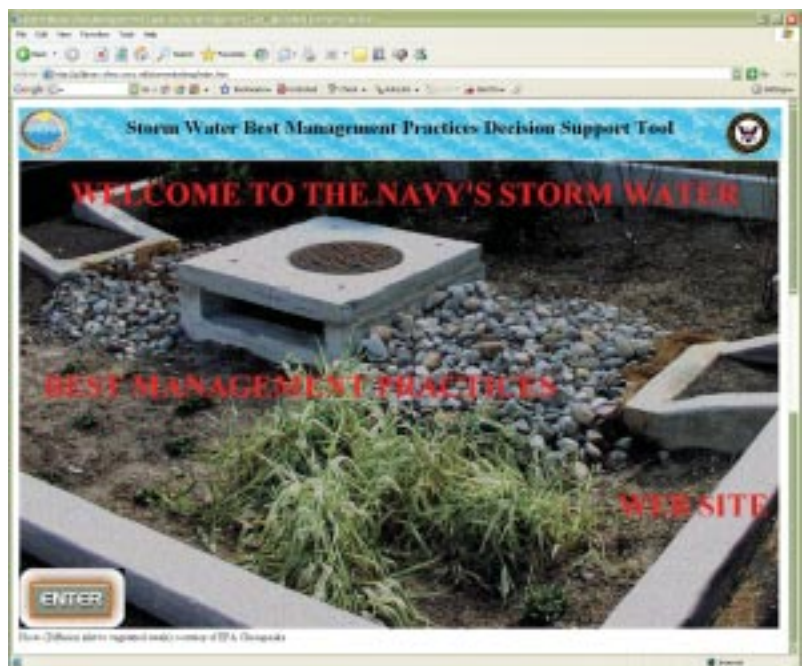
The BMP web site is designed to help Navy environmental professionals and their contractors assess pollution reduction methods from storm water runoff. This decision support tool is intended to provide preliminary treatability assessments only. The user should seek professional advice and consult with state and local regulators before proceeding with implementation of any storm water treatment system. The web site can also be used as an educational tool by those new to storm water management.

This web site adopts a smart buyer's guide approach to obtaining information on storm water BMPs as well as other storm water related information. BMPs are divided into P2 options and treatment options. P2 options are listed alphabetically and by industrial category. Each P2 option contains a description, implementation guidance, training requirements, effectiveness, cost, and limitations. Treatment options are identified by using either the pollutant removal efficiency or user selected design criteria.

Appropriate P2 options should be implemented before initiating treatment measures.

Other features of the web site include:

- **Storm Water Rules and Regulations**
An overview of the U.S. Environmental Protection Agency's regulations for storm water discharge.
- **Hydrology Notes**
A description of the weather data used for the storm water runoff treatment system design.



- **A Storm Water Runoff Calculator**
A stand-alone computer program for calculating the amount of storm water runoff and peak runoff rate. The program can be used to generate estimates for equipment selection or cost estimation purposes.

PAA Program Sponsors Development of BMP Decision Support Tool

funding for the storm water BMP web site was obtained from the Navy's Pollution Abatement Ashore (PAA) program. The PAA program is sponsored by the Chief of Naval Operations Environmental Readiness Division and managed by the Naval Facilities Engineering Command.



■ Glossary

A list of terms and definitions commonly used in storm water treatment technology.

■ Web Links

A list of storm water related web sites.

■ Contact Information

E-mail and phone numbers for personnel to contact with questions or suggestions on improving the storm water BMP web site. ⚓

CONTACT

Gary Anguiano

Naval Facilities Engineering Service Center
805-982-1302
DSN: 551-1302
gary.anguiano@navy.mil

PAA Program Releases Year in Review Report

FY2006 Achievements Focus on Technology Integration & Collaboration

The Pollution Abatement Ashore (PAA) program has released its annual report to highlight the program's accomplishments in Fiscal Year (FY) 2006 and share its strategic objectives for FY2007. The report, entitled "FY06 Year in Review: Accomplishments of the Navy's 6.4 Environmental Pollution Abatement Ashore Program," is a 24-page document that contains insights into the PAA program's successes in FY2006. In particular, program personnel achieved the following specific milestones in FY2006:



1. Made decisions and investments based on Fleet requirements.
2. Focused the program on technology integration.
3. Aligned the program with the Navy's strategic priorities.
4. Established a collaborative management approach across System Commands.
5. Conducted interim program reviews to ensure ongoing successful project execution.
6. Established standard program procedures and schedule.
7. Involved the Fleet through an expanded needs collection process.
8. Leveraged resources and expertise of other technology demonstration programs.

9. Established a web site that promotes information exchange among program personnel and Fleet customers.

This annual report also provides a listing of the 12 technologies that were successfully demonstrated and validated (dem/val) in FY2006 as well as a listing of the 12 new dem/val projects that the PAA program will initiate in FY2007.



The PAA program is the Navy's environmental research and development dem/val program, sponsored by the Chief of Naval Operations Environmental Readiness Division and managed by the Naval Facilities Engineering Command. The program supports Fleet readiness by minimizing operational risk, constraints, and costs while ensuring shore-based environmental stewardship and regulatory compliance. The program seeks to accomplish this mission through the evaluation of cost-effective technologies, processes, materials, and knowledge enhance environmental readiness of Naval shore activities and ensure they can be integrated into weapons system acquisition programs.

For a copy of the PAA program's FY2006 annual report, visit the program's web site at www.paa.navy.mil or contact Scott Mauro, the PAA program manager. ⚓

CONTACT

Scott Mauro

Naval Facilities Engineering Command
805-982-4454, DSN: 551-4454
202-685-9324, DSN: 325-9324
scott.mauro@navy.mil

NAVSEA to Implement Standard Chemical List

Complex Algorithm Developed to Prioritize EPA List of Lists

Personnel from the Naval Surface Warfare Center Carderock Division (NSWCCD), in conjunction with the Naval Sea Systems Command's (NAVSEA) Pollution Prevention Working Group, have developed a standard Prohibited and Controlled Chemical List (PCCL) to guide and prioritize Navy hazardous material minimization and elimination efforts. The intent of the PCCL is to help members of the Navy's afloat, ashore, and acquisition communities reduce their use of hazardous substances.

This work is being conducted under the sponsorship of the Chief of Naval Operations Environmental Readiness Division's Pollution Abatement Ashore (PAA) Program, managed by the Naval Facilities Engineering Command.

NAVSEA's Pollution Prevention Working Group championed the development of a standard list, which has been accomplished through the advocacy of the Naval Technical Authorities, SEA 05M4 (Shipboard Environmental Protection Division), SEA 04RE (Environmental Management and Policy Division), SEA 04RS (Safety Management Division), and representatives from the afloat, ashore, and acquisition communities.

To develop a standard PCCL, NSWCCD selected the U.S. Environmental Protection Agency's (EPA) List of Lists as the starting point, and identified environmental regulations and occupational safety and health standards to use as factors in prioritizing the List of Lists. Weights were assigned to each factor, putting greater emphasis on certain risks to human health and the environment,

and Navy liability related to environmental compliance and human health impacts. A multi-tiered computer algorithm was then developed to quantify the hazard severity attributed to each chemical on the EPA List of Lists and ultimately generate a list of chemicals in priority order from greatest risk to the environment, human health, and liability, to least. NSWCCD recommended that the prioritized list be divided into three tiers based on degree of risk; specifically,

- Tier 1: Prohibited Chemicals,
- Tier 2: Controlled Chemicals, and
- Tier 3: Chemicals of Concern.

The methodology used to build the algorithm and generate the PCCL was examined and embraced by industrial hygienists at NAVSEA, Portsmouth Naval Shipyard, and in the private sector.

The development of a standard chemical list will provide opportunities to reduce hazardous substances throughout all operations of the Navy.

A multi-tiered computer algorithm was developed to quantify the hazard severity attributed to each chemical on the EPA List of Lists.



New ship acquisition programs like Maritime Prepositioning Force (Future), will have the ability to tailor a substance avoidance list based on the PCCL methodology. When considering Navy aircraft acquisition, like that of the Joint Strike Fighter (JSF) program, great opportunity exists in the areas of maintenance and repair through revised process control and material substitution initiatives that utilize this standardized approach of minimizing or eliminating chemicals that pose the greatest risk and liability to the Navy and its personnel.

JSF photo courtesy of Lockheed Martin

The Basics About the PAA Program

The PAA program, the Navy's environmental shoreside 6.4 technology demonstration/validation program, supports Fleet readiness by minimizing operational risk, constraints, and costs while ensuring shore-based environmental stewardship and regulatory compliance. The program seeks to accomplish this mission by investing in innovative and cost-effective technologies, processes, materials, and knowledge that enhance environmental readiness of Naval shore activities and weapons system acquisition programs.



The PAA program validates Fleet environmental requirements, develops proven environmentally beneficial solutions, and facilitates integration of solutions to the Fleet.

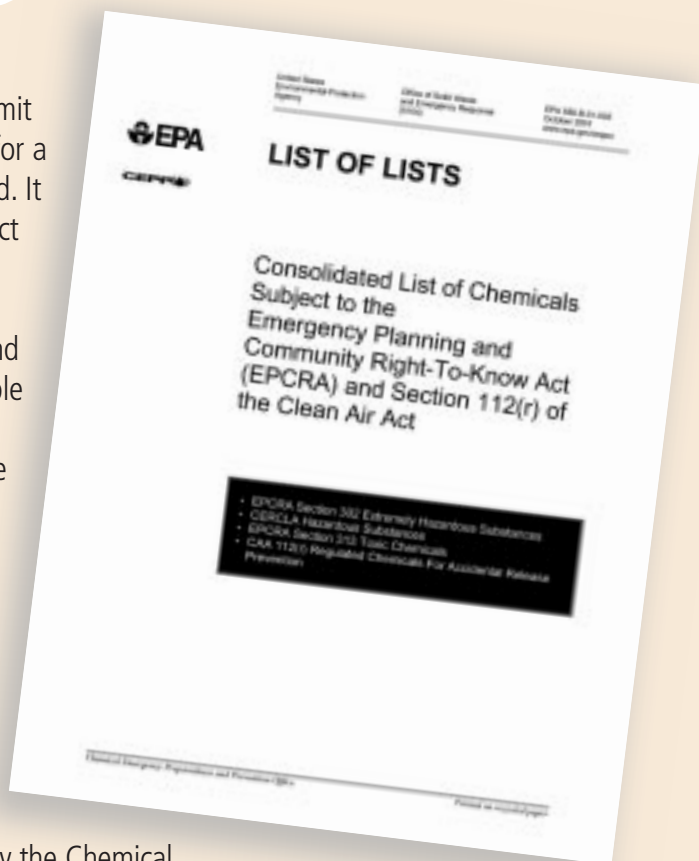
For more information, visit the PAA program web site at www.paa.navy.mil or contact Scott Mauro, the PAA Program Manager at 805-982-4454, DSN: 551-4454 or scott.mauro@navy.mil.

The Navy specifically references the implementation of a standard list of targeted chemicals in the most recent revision of Naval Vessel Rules (NVR) for Environmental Protection Systems. When updated, the NAVSEA Design Supplement for Hazardous Material Control and Management will delineate specifically those chemicals listed on the Navy's newly developed PCCL. Using the PCCL as guidance, new ship acquisition programs will have the ability to tailor a substance avoidance list based on this methodology. For ashore and afloat operations, opportunity exists in the implementation of revised process control and material substitution, basing such efforts on this standardized approach of minimizing or eliminating those chemicals posing the greatest risk and liability to the Navy and its personnel. Tracking the use of hazardous substances in these applications through implementation of

The Basics About EPA's List of Lists

The Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-to-Know Act (EPCRA) and Section 112(r) of the Clean Air Act, known as the "List of Lists" is a chemical list that includes chemicals subject to reporting requirements under EPCRA, also known as Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA), and chemicals listed under section 112(r) of the Clean Air Act (CAA).

This consolidated list has been prepared to help firms handling chemicals determine whether they need to submit reports under sections 302, 304, or 313 of EPCRA and, for a specific chemical, what reports may need to be submitted. It will also help firms determine whether they will be subject to accident prevention regulations under CAA section 112(r). Separate lists are also provided of Resource Conservation and Recovery Act (RCRA) waste streams and unlisted hazardous wastes, and of radionuclides reportable under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). These lists should be used as a reference tool, not as a definitive source of compliance information. Compliance information for EPCRA is published in the Code of Federal Regulations (CFR), 40 CFR Parts 302, 355, and 372. Compliance information for CAA section 112(r) is published in 40 CFR Part 68. This document is also available in a searchable database format at <http://www.epa.gov/ceppo/ap-otgu.htm>.



The chemicals on the consolidated list are ordered both by the Chemical Abstract Service (CAS) registry number and alphabetically. For the list ordered by CAS number, categories of chemicals which generally do not have CAS registry numbers, but which are cited under CERCLA, are placed at the front of the list. EPCRA section 313 categories are placed at the end of the list with their 313 category code.

The lists include chemicals referenced under five federal statutory provisions.

More than one chemical name may be listed for one CAS number because the same chemical may appear on different lists under different names. For example, for CAS number 8001-35-2, the names toxaphene (from the section 313 list), camphechlor (from the section 302 list), and camphene, octachloro- (from the CERCLA list) all appear on this consolidated list. The chemical names on the consolidated lists generally are those names used in the regulatory programs developed under EPCRA, CERCLA, and CAA section 112(r), but each chemical may have other synonyms that do not appear on these lists.

Source: www.epa.gov/ceppo/pubs/title3.pdf

FOR MORE INSIGHT

For more insight into the NVR for Environmental Protection Systems, read our article entitled, "Naval Vessel Rules for Shipboard Environmental Protection Systems: Ensuring Navy Ships Are Designed for Affordable and Mission-Compatible Environmental Compliance" in the winter 2006 issue of Currents. Browse the Currents archive at the Naval Air Systems Command's environmental web site at www.enviro-navair.navy.mil.



For more insight into the JSF program's substance avoidance list, read our article entitled, "Maintaining the Joint Strike Fighter: Greener Engine Maintenance Could Reduce Worker Hazards & Regulatory Constraints" in the spring 2006 issue of Currents.



the PCCL will allow the Navy to more effectively direct dwindling research and development, test and evaluation (RDT&E) resources to reduce hazardous substance use.

NSWCCD, in coordination with the NAVSEA Pollution Prevention Working Group, plans to further evaluate chemicals listed in the prohibited tier to address the greatest chemical concerns directly affecting NAVSEA acquisition, ship, and shore operations. The result of this evaluation will be a shorter and more focused list of chemicals that are to be disseminated to the NAVSEA community as the latest iteration of the NAVSEA Target Chemical List, first published in April 2003. The Target Chemical List will ultimately be used to identify products and processes used by the Navy that contain and/or utilize these chemical constituents and target them for reduction or elimination. To compliment its effort in developing the PCCL, NSWCCD continues to coordinate with the Office of the Secretary Defense's Materials of Evolving Regulatory Interest Team, shedding light on not only those chemicals imposing current liability to the Department of Defense (DoD), but also those of emerging concern. In using the Navy's PCCL, other DoD Services can expect to identify potential RDT&E opportunities through process analyses and material compatibility studies conducted under the provisions outlined in the Joint Service Solvent Substitution Working Group Methodology. ⚓

CONTACT

Scott Sirchio
Naval Surface Warfare Center—
Carderock Division
301-227-5196
DSN: 287-5196
scott.sirchio@navy.mil

Closing the Circle with White House Awards

Navy Gets Nods for Sustainable Design & Alternative Fuels

The Department of the Navy was honored with two 2006 White House Closing the Circle (CTC) awards—one for sustainable design and a second for alternative fuels.

The White House CTC awards recognize outstanding achievements of Federal employees and their facilities for efforts that resulted in significant contributions to, or have made a significant impact on, promoting environmental stewardship. The awards focus on waste prevention, recycling, and green purchasing activities under Executive Order (E.O.) 13101, environmental management under E.O. 13148, green/sustainable buildings under both executive orders, reduced fuel usage under E.O. 13149, and electronics stewardship. Now in its thir-

teenth year, the awards have been presented to hundreds of Federal installations and individuals for their efforts.

The Office of the Federal Environmental Executive (OFEE) manages the CTC awards program. The process consists of internal agency awards or screening of nominations, nominations screening by an interagency panel of judges, and screening and selection by an outside panel of judges knowledgeable about the awards categories. Award certificates are signed by the President, and awards are presented during a ceremony at the Eisenhower Executive Office Building. OFEE showcases the award winners on its web site (www.ofee.gov) and in the summer issue of its newsletter.

Competition for the awards is intense, especially in categories like waste/pollution prevention and recycling.

However, the nominations in all of the categories reflect the depth and breadth of Federal facility environmental stewardship efforts.

OFEE is a part of the White House Council on Environmental Quality. Its mission is to promote sustainable environmental stewardship throughout the Federal government. The current Federal Environmental Executive, Ed Pinero, was appointed by President Bush in 2004.

The Navy's honorees in sustainable design and alternative fuels are highlighted below.

Sustainable Design/ Green Buildings—Military

Naval Base Ventura County Public Works Department

Building 850: Energy and Sustainability Showcase

Port Hueneme, CA

The Naval Base Ventura County, CA Public Works Department exemplifies

Special features of Building 850 include maximized day-lighting and natural ventilation, which reduces the demand of electrical and mechanical systems.

outstanding environmental stewardship with the finished construction of Building 850. The building was awarded the Leadership in Energy and Environmental Design (LEED) Gold rating award in 2005 for its achievement in sustainable design, construction, and operation. It is the Navy's first LEED Gold rated building, and a showcase facility that demonstrates new concepts in energy efficiency and green building principles, not only to the rest of the Navy, but the surrounding community as well.

The three million dollar building project consisted of a 10,000 square foot renovation and a 7,000 square foot addition, with the achieved goals of having a highly energy-efficient building, having a high quality work environment, demonstrating sustainable technologies, testing and validating sustainable features for replication on future Navy projects, and serving as a teaching resource for others. The project design team used an integrated design process that included the building owner, architects, engineers, landscape architects, and others. The team modeled design concepts at California Polytechnic Institute and the Lawrence Berkeley Laboratory.

Special features of the design include maximized daylighting and natural ventilation, which reduces the demand of electrical and mechanical systems. Sustainability construction techniques include adaptability for alternate future uses with mechanisms for easy dis- and re-assembly that will reduce future costs of occupant moves or churn. Construction measures were also taken to minimize soil erosion, maximize the recycling of scrap materials, and maximize the usage of recycled content and environmentally preferable materials throughout the building itself.

One of the priorities in the Building 850 design was energy and water efficiency, and simulation results show a 55 percent consumption improvement over California's 1995 Title 24 Energy Efficiency Standards. Hot water is provided entirely by a solar water heater. There is limited exterior lighting and the window design provides 100 percent daylight occupied spaces, with backup lighting of T-8 fluorescent fixtures, controlled by dimming electronic ballasts.

The building orientation, configuration, and windows minimize cooling and heat loads through various tempering strategies such as reciprocating compressors that deliver cool air through a variable air volume underfloor air distribution system. Overall proper operation, including measurement and verification, is ensured by a monitoring Energy and Control System.

Water conservation in Building 850 is ensured through a combination of efficient plumbing features such as water-

less urinals and automatic lavatory faucets, the use of reclaimed and captured rain water, and efficient landscaping and irrigation systems. The total simulated indoor potable water consumption is only 61,300 gallons per year, compared to the typical 105,000 gallons per year for a similar facility. In addition, Building 850 made transportation more sustainable with features such as five new electric vehicle charging stations.

To further promote sustainability and the greening success of Building 850, education and awareness tools such as an interactive touch screen computer kiosk is located in the lobby to give occupants and visitors a real-time view of energy demands and sustainable features; posters in the lobby displaying sustainable features; a classroom specifically for sustainable building, and sustainability education; guided building tours for visitors; and sponsored on-site seminars on sustainable design topics.

The building draws more than 100 visitors a year interested in sustainability design to the Naval Base Ventura County. For more information, contact Dennis Talton at 757-322-4211 or dennis.talton@navy.mil.

The Basics About CTC Sustainable Design Awards

building sustainably is the practice of designing, constructing, operating, maintaining, and removing buildings in ways that conserve resources, reduce pollution, increase energy efficiency, and improve indoor air quality. Owning nearly 500,000 buildings, the Federal government has a tremendous opportunity to reduce energy and environmental impacts.

This category recognizes the most innovative Federal government sustainable design and green building projects. It includes all facets of a project's lifecycle, that is, project design, energy efficiency, materials usage, building operations, and end of use issues. It also recognizes the cost effective use of innovative techniques and solutions that utilize sustainable design principles in the planning, construction, and operation of Federal facilities.

Source: OFEE web site (www.ofee.gov)



Naval Base Ventura County Building 850 is an example of energy efficient construction and worthy of the LEED Gold rating award in 2005.

Alternative Fuel/ Fuel Conservation in Transportation—Military

Naval Station Great Lakes Base Support Transportation Team Alternative Fuel and Fuel Conservation in Transportation Great Lakes, IL

Naval Station (NAVSTA) Great Lakes, IL has gone above and beyond with their achievements in alternative fuel programs and their overall promotion of fuel conservation. NAVSTA Great Lakes hosts the Navy's only boot camp, Recruit Training Command, which annually trains and equips up to 50,000 new Sailors. It also provides more advanced training to an average of 15,000 students annually. It manages a fleet of more than 650 passenger cars, light trucks, and construction equipment. Of these, 229 are Alternative Fuel Vehicles (AFV), using a mix of compressed natural gas, E-85 ethanol, and biodiesel. The facility is located in an ozone non-attainment area.

In 2005, NAVSTA Great Lakes installed a compressed natural gas (CNG) fueling facility, purchased additional AFVs, began implementation of a biodiesel fuels program, and reduced overall fuel use by more than 31,000 gallons of fuel used.

Promoting partnership, NAVSTA Great Lakes teamed with the Naval Facilities Engineering Command Midwest, a local natural gas supplier, and a CNG fueling vendor to construct a modern dual pressure CNG fueling station. This facility supports the 67 current CNG vehicles and is sized to support the facility's planned expansion to 200 vehicles. The system has a higher pressure capability, which improves vehicle range per fueling, and NAVSTA has reported improved user satisfaction resulting from this system's installation.

NAVSTA Great Lakes also operates an E-85 ethanol fueling station. Despite budget restrictions, the facility dedicated funding to acquiring 30 additional E-85 vehicles, increasing the fleet total to 162 E-85 capable vehicles.

When combined, the NAVSTA Great Lakes AFV fleet (CNG and E-85) now totals 229 vehicles and equates to 42 percent of the total light vehicle fleet. NAVSTA Great Lakes' goal is to recapitalize its entire vehicle fleet by replacing traditional fueled vehicles

The Basics About CTC Alternative Fuel Awards

With a very large fleet of automobiles, Sport Utility Vehicles, and heavy trucks and buses, the Federal government can lead the way in increasing the use of AFVs and alternative fuels and reducing petroleum consumption. This is the second year this category recognizes programs, practices and procedures implemented in a Federal fleet that result in significant alternative fuel use and fuel conservation measures in transportation. This includes establishment of new alternative fuel infrastructure; methods for encouraging the use of alternative fuels; ride sharing programs; increased vehicle usage efficiency programs; hybrid vehicle or Neighborhood Electric Vehicle acquisition and use; or any other methods your fleet uses to decrease its petroleum consumption.

Source: OFEE web site (www.ofee.gov).

with AFVs at a rate of at least 15 percent per year. In addition to purchasing new AFVs, NAVSTA Great Lakes acquires excess AFV vehicles disposed by other Federal agencies, enabling the facility to expand its fleet at no additional investment cost.

NAVSTA Great Lakes plans to convert not only light and medium, but also heavy construction equipment to B20 biodiesel fuel. NAVSTA has completed the necessary business analysis and equipment evaluation for the biodiesel fueling facility, which was scheduled to be implemented in 2006. With this upcoming switch, 152 current diesel vehicles will be converted to B20 fuel. As a significant result, 70 percent of the total fleet will meet AFV standards. Only emergency medical service and certain tactical equipment will continue to use traditional diesel fuel.

NAVSTA Great Lakes also is reducing petroleum consumption through fuel conservation programs such as a base shuttle system, a vehicle usage and efficiency program, and ride-sharing. Vehicle maintenance and emissions testing programs also exist. These conservation programs resulted in a reduction of more than 31,000 gallons of fuel consumed compared to 2004 consumption. On a daily basis, an average of 500 base personnel use the shuttle program. Environmental and resource beneficial, this saves 800 vehicle trips each day, and an estimated 12,000 gallons of fuel each year.

Just as importantly, NAVSTA Great Lakes is excelling in its education and outreach involvement. Through a multi-media approach, the facility encourages and informs the community, regulatory, and



ABOVE: NAVSTA Great Lakes operates an E-85 ethanol fueling station.

RIGHT: Members of the Great Lakes Fuel Team that won a 2006 White House CTC award. Left to right, Larry Major, Sam Barranco, George Borucki, Jill Zavaski, Ken Endress, and Josie Sandley.



industry groups about alternative fuel and pollution prevention programs. A specific example of the many outreach efforts is their participation in Earth Day awareness activities, including school visits, exhibits, and tours. Additionally, NAVSTA Great Lakes is a member of the Chicago Area Clean Cities Coalition, a Partner for Clean Air with the Illinois Environmental Protection Agency (EPA), and is actively involved with U.S. EPA Region 5 and Illinois EPA in the Illinois Department of Defense Pollution Prevention Partnership.

For more information on NAVSTA Great Lake's alternative fuel and

conservation in transportation, contact Mark Schultz at 847-688-5999, x-140 or mark.r.schultz@navy.mil. 

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CONTACT

Dana Arnold
Office of the Federal
Environmental Executive
202-343-9374
arnold.dana@ofee.gov

Swapping Invasives

with Natives

NAS Key West Replacing Invasive Trees & Vegetation with Indigenous Species

Personnel from the Naval Air Station (NAS) Key West, FL and the state of Florida joined forces in early October 2006 to combat invasive, exotic vegetation on air station property and restore the grounds with trees and vegetation native to the Sunshine State.

Buttonwood trees and other indigenous vegetation replaced approximately 60 Australian pines that were removed from the shoreline of NAS Key West's Truman Annex beach area. The vegetation replacement project coincided with National Public Lands Day and the air station received a Department of Defense grant to purchase approximately 200 plants native to the Florida Keys.

"This joint project between NAS Key West and the state of Florida is one of the goals of the Department of the Navy's Natural Resource Management Plan," said Ed Barham, NAS Key West Environmental Director. "Navy bases around the U.S. are removing exotic and invasive species and replacing them with indigenous vegetation. NAS Key West's partnership with the state of Florida is part of that larger plan."

Despite being a non-native, invasive species, the Australian pine has supporters in the Keys. Many people enjoy the shade and the relaxing sound of the breeze through the pine needles. The trees were planted throughout Florida and the Keys in the late 19th century and served as a source of lumber and a protective barrier against

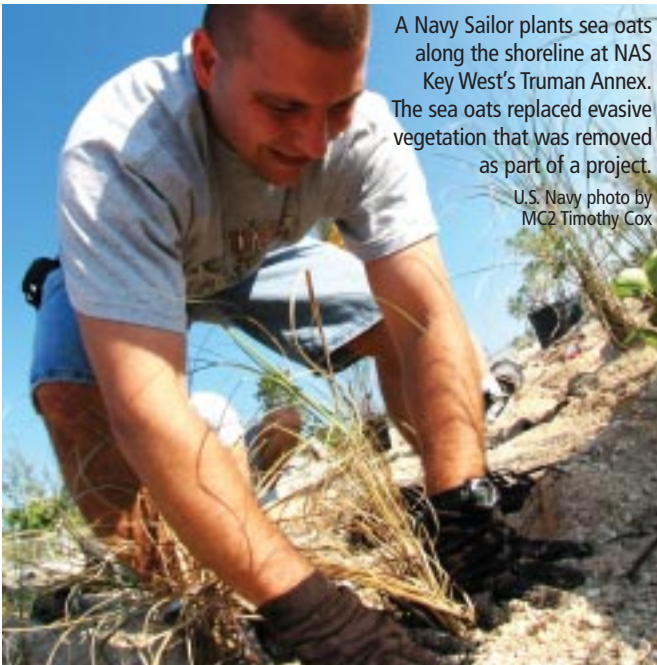
heavy winds. Florida's tropical climate and the pines' tolerance to saltwater appeared to be a good fit a century ago. However, modern day environmental groups armed with a greater understanding of ecosystems warn of the impact of invasive species and encourage their removal.

The Conservancy of Southwest Florida is one of many environmental groups who warn of the dangers of invasive, exotic species. The 40 year-old, non profit organization advocates local, state, federal and private efforts to stop invasive, exotic vegetation. According to the group, 27 percent of Florida's 3,448 named plants are non-native and they are interrupting the natural balance in many areas including protected wildlife areas such as Everglades National Park. Australian pines, like the ones being replaced with native vegetation at NAS Key West, do little to protect beach erosion because of their shallow root system.

27 percent of Florida's 3,448 named plants are non-native and they are interrupting the natural balance in many areas including protected wildlife areas.



A young girl pulls an Australian pine sprout from the shoreline at NAS Key West's Truman Annex beach. Military children pulled over 600 Australian pine sprouts that were growing unchecked on Navy property.
U.S. Navy photo by MC2 Timothy Cox



A Navy Sailor plants sea oats along the shoreline at NAS Key West's Truman Annex. The sea oats replaced evasive vegetation that was removed as part of a project.

U.S. Navy photo by MC2 Timothy Cox



Sea oats were planted along the shore line at NAS Key West's Truman Annex to replace invasive vegetation that was removed.
U.S. Navy photo by MC2 Timothy Cox

More importantly, the Conservancy of Southwest Florida says the trees' shallow root system threaten sea turtle nesting areas. When sea turtles can't burrow down in the sand because of tree roots, they will abandon the beach area and look for another potential nesting area which may be even more unfavorable.

NAS Key West commanding officer Capt. J. R. Brown understands the fine balance between environmental stew-

ardship and accomplishing the military mission. Truman Annex beach, where the first Australian pines will be replaced, is down the road from his home.

"Shade is very important on the beach and it's important to me. I'm glad to see we're replacing the Australian pine trees with native trees like the Buttonwood tree. They won't provide the shade now. But in the future, they'll provide even more," said Brown. "This will be a success story."

The Basics About the Cottonwood

Buttonwoods (*Conocarpus erectus*) are native to the Florida Keys and readily available at most landscape nurseries. They are typically found along marine shorelines, just above the high water line. Buttonwoods are salt and drought tolerant, and can also withstand high winds and storm surges. They play an important role in preventing shoreline erosion and aid in filtering stormwater runoff, from uplands which could impact water quality. These characteristics commonly associate Buttonwoods with the more widely known mangrove species. They are long lived, fast growing trees that if allowed, will grow into magnificent sprawling trees with craggy bark. If preferred, they can be maintained as a shrub or hedge. They are an important host tree for epiphytic plants such as orchids and bromeliads in South Florida and provide significant food and cover for wildlife.

Genus

Conocarpus erectus

Family

Combretaceae. The genus *Conocarpus* is composed of two species native to North America and the shores of tropical America and Africa. The word *conocarpus* means "cone fruit", in reference to the cone like rounded fruits.

Distribution

The Cottonwood is native to the silt shores of coasts and islands of Florida, including the Florida keys. The tree is also widely distributed on coasts of tropical America from Bermuda and Bahamas through West Indies including

Puerto Rico and Virgin Islands. It is also distributed from Mexico south on the Atlantic coast to Brazil and on the Pacific coast to Ecuador including the Galapagos Islands and Peru. It can also be found lining the coasts of west Africa.

The Tree

The Buttonwood occurs in tidal lagoons and bays of brackish water. It forms dense thickets of shrubby growth, but becomes tree like when growing alone. Flowers and fruits are produced year round. The tree reaches heights of 60 feet and three feet in diameter. The bark is thick and has broad plates of thin scales which are gray to brown. The bark is rich in tannins.



Photo by Mark W. Skinner, USDA-NRCS Plants Database

The Wood

The heartwood of Buttonwood is olive brown, with a reddish tinge, while the sapwood is lighter. It is moderately heavy, hard and strong. It has a high luster, medium texture, with a straight to mottled grain.

Source: Center for Wood Anatomy Research, U.S. Forest Service (www2.fpl.fs.fed.us/TechSheets/HardwoodNA/hardcommon.html)

FOR MORE INSIGHTS

For more insights into the Navy's struggle against invasive species, read our article entitled, "Military Installations Threatened by Invasive Species: New Report Says Exotic Plants & Animals Impair Military Operations, Put Natural Heritage In Danger" in the winter 2006 issue of *Currents*. According to a National Wildlife Federation report, invasive species are infiltrating military lands across the country, severely impacting the health and welfare of U.S. military forces, citizens and ecosystems.



A Navy family member waters newly planted vegetation.
U.S. Navy photo by MC2 Timothy Cox

NAS Key West seeks partnerships and community involvement in environmental projects. Other success stories in the past include the air station's bald eagle nesting project, studies and preservation of the Lower Keys marsh rabbit, and the Key West harbor dredge project that received recognition for its success in bringing together numerous agencies to finish a complicated project in an environmentally sensitive maritime sanctuary.

"It's important we do this," said Brown. "We've been real smart about projects like this and I'm glad we have a partner in the state of Florida." 🌿

CONTACT

James Brooks
Naval Air Station Key West, FL
305-293-2425
DSN: 483-2425
james.e.brooks@navy.mil

Toledo Zoo & Navy Partner to Study Cuban Boa

Researchers Use GIS & Other Technology to Collect Biological Data

Living within the scrub and woodland habitats of the U.S. Naval Station Guantanamo Bay (GTMO) is the largest snake species of Cuba, the Cuban boa (*Epicrates angulifer*). Researchers from The Toledo Zoo and the U.S. Navy are capitalizing on this species' large size and abundant numbers on the Station to use technology to collect habitat and movement pattern data.

The Cuban boa is closely related to four other island boa species that are listed as threatened or endangered: Virgin Islands tree boa; Mona boa; Puerto Rican boa; and Jamaican boa. The boa itself is listed as "Near threatened" by the International Union for the Conservation of Nature. Within the 28,800 acres of GTMO, located on the southeastern end of Cuba along the Caribbean Sea, the population of the Cuban boa appears to be healthy. In other parts of Cuba, however,

populations may be at risk. Perceived as a threat to domestic poultry, the snake is widely persecuted in Cuba.

While its reputation as a threat to poultry may be exaggerated, the Cuban boa is Cuba's largest land predator and is the primary predator of a rodent, the Cuban hutia (*Caproys pilorides*). For this reason, the boa is recognized as a keystone species in the island ecosystem. (See our sidebar entitled, "The Basics About A Keystone Species.") Recognizing its importance, researchers initiated a study of the snake's habitat use in 2000 in an effort to understand and protect the species at GTMO.

The objective of the study is to determine the movement patterns and habitat use by the boa within the various habitats of GTMO. A unique constellation of skills at GTMO and coordinated use of various technologies are yielding valuable information on the snake's movements, habitat use, and reproductive status. Radio-telemetry, global positioning systems and geographical information technologies, ultrasound equipment, an Army Veterinary Detachment and the GTMO Weather Detachment all contribute to the study effort.

Navy biologists and Toledo Zoo personnel begin their efforts searching for the snakes at night in likely habitats such as stream beds. Boas are more active at night and are often encountered at GTMO by military personnel as the snakes cross roads in the evening.



Boa emerges from under a log.



FIGURE 1: Preparing snake for transmitter implantation.



FIGURE 2: Transmitter implantation.



FIGURE 3: Peter Tolson radio tracking a Cuban Boa.

The Basics About a Keystone Species

much like the stone that supports all others in an arch, a keystone species is critical to maintaining the balance and diversity of an entire biological community, or ecosystem. Often this species' affect is underestimated until it is removed from the system, leading to an extreme change in the relative number of other species within the system.

Captured boas are transported to the U.S. Army Veterinary Detachment GTMO, where Toledo Zoo and Army veterinarians take blood samples, conduct ultrasounds to determine reproductive status, and surgically implant a radio-transmitter into the snake (see Figures 1 and 2). The snake's robust size allows larger, long-life transmitters to be used. The snake is released at its point of capture several days after the transmitter implantation. Subsequent tracking of the snake is performed using a hand-held radio receiver and directional antenna (see Figure 3).

Global Positioning System (GPS) and Geographical Information System (GIS) technology plays a vital role in organizing and analyzing the boa movement and habitat use data. Sites where the boas are located in the field are recorded using a GPS. These data are entered into a GIS where they are overlaid on satellite imagery. The GIS is used to create maps of the movements of the snakes and to calculate the activity range, size and habitat use of individual snakes (see Figure 4).

The co-location of both the Army Veterinary Detachment and the GTMO Weather Detachment at Guantanamo has enabled the researchers to correlate snake movements with both weather and reproductive condition.



FIGURE 4: Movements of male Cuban Boa on leeward side of Guantanamo Bay.

A Boa By Any Other Name

The Cuban boa is closely related to four other island boa species that are listed as threatened or endangered. Information on three of those species is provided below:

Name	Status	Description	Feeding Habits
VIRGIN ISLANDS TREE BOA (<i>Epicrates monensis granti</i>)	Endangered throughout its range. (Federal Register, 7 December 1979)	The adult body color is light plumbeous brown with darker blotches partially edged with black. The ventral surface is greyish-brown speckled with darker spots. This snake grows to slightly less than a meter snout-vent length.	The bulk of this snake's diet seems to consist of the lizard <i>Anolis cristatellus</i> . However, this boa may opportunistically consume small mammals and nestlings of small birds.
MONA BOA (<i>Epicrates monensis monensis</i>)	Threatened throughout its range. (Federal Register, 3 February 1978)	This nonvenomous snake grows to about 1 meter in length. The ground color of the mature individual is light brown dorsally, with 44 dark brown markings. The underside is beige with a few scattered spots. The dorsal pattern of the body consists of two rows of spots that extend to the end of the tail. The spots vary in number from 51 to 57.	It is believed that the bulk of this rare snake's diet consists of bats.
PUERTO RICAN BOA (<i>Epicrates inornatus</i>)	Endangered throughout its range. (Federal Register, 13 October 1970)	The color of this snake is somewhat variable but usually ranges from pale to dark brown, sometimes grayish, with 70 to 80 darker colored blotches along the back from neck to vent. These dorsal blotches are generally dark-bordered with the centers of a lighter hue. Maximum size is approximately six and a half feet.	Observations of captive specimens suggest that under natural conditions the diet of sub-adults and adults consists of birds, small mammals, and lizards. The boa feeds by seizing the prey in its jaws, wrapping several coils around the victim, and then constricting until the prey has suffocated. The prey is then swallowed head first. The feeding habits of the very young are unknown.

Source: U.S. Fish and Wildlife Service, Division of Endangered Species (www.fws.gov/endangered).



Overall health also is assessed once a year, when each radio-tracked snake is captured in the field and evaluated.

Since the start of the investigation, 17 snakes have been tracked and more than 500 observations have been recorded. Some snakes have been regularly tracked for six years. While Cuban boas are typically associated with woodland areas, rocky cliffs, and caves, the study has revealed heavier than expected use of grasslands. They are good climbers, and smaller boas often climb trees and shrubs to forage. They will consume birds, bats and lizards, but adult snakes are particularly efficient predators of hutias.

In an education and outreach component of the study, researchers and GTMO environmental professionals work to educate station residents about the boa. Several times a year,

programs are conducted to inform GTMO personnel about the Cuban boa study. These programs always include using a live snake for people to see and touch. One of the objectives of the program is to increase the awareness of station residents about the importance of this species at GTMO and throughout Cuba.

The protected and relatively undisturbed habitats at GTMO provide a unique opportunity for this task. The data generated from this study will help biologists understand the ecology and life history of this species and may also be useful in conservation efforts of closely related species that are threatened or endangered. An added benefit for the Navy is fulfilling goals of the GTMO Integrated Natural Resource Management Plan and benefits the Toledo Zoo by having a study site where the snakes are protected. ⚓

CONTACTS

Chris Petersen
Naval Facilities Engineering
Command Atlantic
757-322-4560
DSN: 262-4560
chris.petersen@navy.mil

Fred Burns
U.S. Naval Station
Guantanamo Bay Cuba
011-5399-4662
burnsfw@usnbgtno.navy.mil

Peter Tolson
The Toledo Zoo
419-385-5721
peter.tolson@toledozoo.org

Yokosuka/NAVSEA Partnership Reduces Hazardous Materials

COWPENS Pilot Project Underway

Hazardous materials experts from U.S. Fleet and Industrial Supply Center (FISC) Yokosuka, Japan and engineers from the Naval Sea Systems Command (NAVSEA) are currently

working with the crew of the USS COWPENS (CG 63) to transfer responsibility for hazardous materials from ships of the Forward-Deployed Naval Forces to FISC Yokosuka.

“The pilot project is critical to the future deployment of Littoral Combat

Ships (LCS), which will have smaller crews. And it is an important part of distance support,” said Jehdia Bottinelli, regional hazardous material director at FISC Yokosuka.

“This program is the way forward,” said Bottinelli. “As the Navy reduces the number of Sailors on board ships, distance support is going to happen. Pollution prevention, reducing waste and getting behind distance support initiatives are hugely important. It just makes sense.”

FISC Yokosuka already takes responsibility for the safe storage and disposal of hazardous material, including paints, cleaners, and fuel-related items. With sites throughout the U.S. Seventh Fleet’s Area of Responsibility (AOR), FISC Yokosuka provides this service—either directly or through contracting—wherever U.S. Navy ships travel in the western Pacific.

If ships from another AOR visit the Western Pacific (WESTPAC), Bottinelli will coordinate with other FISCs as well as Commander, Fleet and Industrial Supply Centers (COMFISC) and the Naval Supply Systems Command (NAVSUP).

“Every part of the world is covered by COMFISCs,” said Bottinelli. “There are eight hazardous materials directors, and we have hazardous materials centers throughout the world. So, if a ship



The guided-missile cruiser USS COWPENS (CG 63) navigates alongside the Military Sealift Command fleet replenishment oiler USNS TIPPECANOE (T-AO 199). FISC Yokosuka and the USS COWPENS are conducting an ongoing pilot project to maximize distance support and minimize hazardous material handling for ships’ crews.

U.S. Navy photo by Mass Communication Specialist Seaman Joshua Wayne LeGrand



Distance support logistics experts and other Sailors of FISC Yokosuka, form a human chain to safely load and off-load supplies from the USS COWPENS (DG 63). FISC Yokosuka, part of Commander, Fleet and Industrial Supply Centers and NAVSUP, takes care of tracking, storing and recycling hazardous materials for the forward-deployed naval forces serving in the western Pacific. FISC Yokosuka and the USS COWPENS are conducting an ongoing pilot project to maximize distance support and minimize hazardous material handling for ships' crews.

Photo by Yohsuke Onda, FISC Yokosuka

deploys into another AOR, that director can coordinate with other directors.”

FISC Yokosuka's role is growing in WESTPAC as the regional command assumes responsibility for ordering, tracking, and minimizing ships' hazardous materials, in addition to proper storage and disposal of materials and waste.

The ultimate goal is to provide this capability from the start for the new generation of Navy ships.

According to Carlos Cruz, head of NAVSEA Warfare Center Philadelphia's Afloat Hazardous Materials Group, “The LCS ships will be minimally manned. They actually require that we transfer some of the requirements from the ship to the shore community. That's what we're doing. Through our strong partnership, we are working together to come up with the best way to manage the future.”

Cruz added, “FISC (Yokosuka) is now handling all of the hazardous materials, and we're maintaining the ship's hazardous materials list and developing the standard operating procedures on how to run a hazardous minimization center on board the ship.”

The Basics About FISC Yokosuka

FISC Yokosuka provides logistics, business and support services to fleet, shore and industrial commands of the Navy, Coast Guard, Military Sealift Command, and other joint and allied Forces. FISC Yokosuka, one of seven supply centers under Commander, Fleet and Industrial Supply Centers, delivers combat capability through logistics by teaming with regional partners and customers to provide supply chain management, procurement, contracting and transportation services, technical and customer support, defense fuel products and worldwide movement of personal property. COMFISCS comprises more than 7,000 military and civilian logistics professionals, operating as a single cohesive team, and providing logistics services from more than 100 locations worldwide. A component of NAVSUP, headquartered in Mechanicsburg, PA, COMFISCS is part of a worldwide logistics network of more than 24,000 military and civilian personnel providing “One-Touch Supply.”



NAVSEA representative Mark Lynch shows SK1(SW/AW) Sean Mahoney of the USS COWPENS (CG 63) how to identify and minimize hazardous materials.

U.S. Navy photo by Phil Molter, CFAY Public Affairs

CHRIMP Requirements

For the latest information about the CHRIMP requirements mandated by N45, read our article entitled, “One Command Now Responsible for CHRIMP Operations Ashore: NAVSUP Designated to Conduct Operations Under Regional Concept” in the fall 2006 issue of *Currents*.



FISC Yokosuka will continue to work closely with the COWPENS to maintain its hazardous materials inventory.

“This is all part of the Consolidated Hazardous Material Reutilization and Inventory Management Program (CHRIMP)—mandated by the Chief of Naval Operations Environmental Readiness Division (N45),” said Cruz.

He added, “This is all being driven by our need to find a better way to do business. We need to make sure the ship has all the material they need and that they will get to their destination safely.”

Rey Soriano, a CHRIMP technician at FISC Yokosuka, deployed with the COWPENS in September 2006 and found ways to get the job done without filling out forms—more email, less paper. According to Soriano, the new process saves time for Sailors while ordering or returning hazardous materials. And FISC now has responsibility for inventory and supply management.

“Now, we’re handling their stock replenishment requisitions for them. So it’s less work for them,” said Soriano.

“We’re also developing a way to predict the Sailor’s needs based on their planned maintenance requirements for grease, silicon, oil, paint, corrosion prevention compounds



A diverse team of Sailors from the USS COWPENS (CG 63) and civilians from FISC Yokosuka and NAVSEA are working together in a pilot project to transfer responsibility for hazardous materials from ship to shore.

U.S. Navy photo by Phil Molter, Commander Fleet Activities Yokosuka (CFAY) Public Affairs

or cleaning compounds. We're helping them by predicting their needs and responding accordingly."

The initiative is being welcomed by the Fleet, according to Lt.Cmdr. Ramon Marin, supply officer aboard the COWPENS.

"The Fleet appreciates the overall benefits of this process," said Marin. "Ultimately, it will mean less hazardous material for us to carry and manage."

He added, "FISC Yokosuka has been very helpful. We've asked them to help us get ready for the prestigious award, the Battle E. Part of the preparation is a hazardous materials inspection."

FISC Yokosuka experts and NAVSEA engineers are also coordinating with Naval Air Systems Command and LCS designers as they continue their work on board USS COWPENS.

"True to their promise, they are not intrusive," said Marin. "And, guess what? Everything is being taken care of."

Cruz and Bottinelli believe that the pilot project with the COWPENS introduces a new model that will be emulated at other locations across the Navy.

According to Bottinelli, "One of the things we're doing right now is figuring out a way to automate as much of the process through the 3-M (Maintenance Material Management) system

as possible. We want to be able to project the requirements for the ship and ensure that all of their needs are met," she said.

"We want to be able to anticipate their needs so the ship doesn't have to worry," she added. "We at FISC Yokosuka are here for them." ⚓

CONTACTS

Bill Doughty

U.S. Fleet and Industrial Supply Center Yokosuka, Japan

011-81-46-816-8062

DSN: 243-8062

bill_doughty@yoko.fisc.navy.mil

Jehdia Bottinelli

U.S. Fleet and Industrial Supply Center Yokosuka, Japan

011-81-46-816-6009

DSN: 243-6009

jehdia_bottinelli@yoko.fisc.navy.mil

Biodiesel Project Yields New Info on Air Emissions

Yellow Grease Biodiesel is Cost-Effective & Lowers Greenhouse Gases

Personnel from the Naval Facilities Engineering Service Center (NFESC) recently completed a project that shows air pollution emission factors for biodiesel compares quite favorably with the newly required ultra-low sulfur diesel (ULSD). The three-year project, funded by the Environmental Security Technology Certification Program (ESTCP), collected emissions data from Department of Defense (DoD) diesel engines fueled with various types and blends of biodiesel as well as ULSD and JP-8 jet fuel.

Biodiesel is a nontoxic, biodegradable fuel made from organic fats and oils that serves as a replacement, substitute, and enhancer for petroleum diesel. It may be blended with petroleum diesel in all existing diesel engines with little or no modification to the engine. Previous studies suggest that the use of biodiesel can significantly reduce the quantity and toxicity of the air pollution produced by diesel engines.

The primary justification for this project was to provide the biodiesel emissions data necessary to promote its increased use across DoD. Currently, there are few emissions data in the technical literature from diesel engines similar to the age and types commonly used by DoD. Of special concern is the fact that much of the existing data are not “real world” data—they were obtained using engine dynamometer testing. Recent work has suggested that performing emissions testing while the engines are installed in the actual vehicles provides a much better measure of

emissions. For the NFESC test program, all the testing was performed with the engines installed in the applicable generators or vehicles. An additional concern is the lack of data for yellow grease based biodiesel—a product manufactured using vegetable oil recycled from commercial cooking operations. It is expected that the data from this study will be incorporated into previous datasets, to provide the U.S. Environmental Protection Agency (EPA) a more detailed and comprehensive database on different varieties of biodiesel feedstocks and applications.

The project included measuring the regulated air emissions of carbon monoxide (CO), hydrocarbons (HC), nitrogen oxides (NO_x), and particulate matter (PM). Testing was performed in accordance with EPA testing standards and

The Basics About Biodiesel

Biodiesel is one of the new fuel formulations that offer several advantages. It is typically sold and used as a 20 percent blend in conventional petroleum diesel (i.e., B20) at little additional cost. Biodiesel can be produced from several feedstocks, including virgin vegetable oil, fish oil, animal fats, and used vegetable oil. One distinct and notable attribute of biodiesel is that it can take on characteristic properties of the feedstock. For example, biodiesel from certain sources makes the diesel exhaust smell like deep fried potatoes. Not only does the exhaust smell better, it is actually cleaner. Biodiesel reduces hydrocarbon, particulate matter, and carbon monoxide emissions as shown in the following table.

Typical Tailpipe Emission Reductions with Biodiesel

Pollutant	20 Percent Blend of Biodiesel vs. No.2 Diesel Fuel	Pure Biodiesel vs. No.2 Diesel Fuel
Hydrocarbons	–20 to –30 percent	–80 to –90 percent
Carbon Monoxide	–10 to –20 percent	–30 to –40 percent
Particulate Matter	–5 to –15 percent	–30 to –50 percent
Nitrogen Oxides	+4 to +5 percent	+6 to +10 percent

University of California, Riverside Engine Dynamometer Testing Facility. Although this equipment was not included in NFESC's test program, this image is provided to show the difference between a chassis and engine dynamometer.



duty cycles. The tests were performed both in the laboratory and the field. The project also included measurements of Hazardous Air Pollutants (HAP), the evaluation of two proposed NO_x reduction fuel additives, as well as the chemical speciation of the HC emissions and characterization of the PM emissions. For the project, five fuels were tested, including:

- A soy-based biodiesel,
- A baseline petroleum based California Air Resources Board certified ULSD,
- JP-8 jet fuel, and
- Two yellow-grease-based biodiesels (one of which was manufactured at Naval Base Ventura County using yellow grease collected on-base).

The biodiesel fuels were tested at the 20 percent (B20), 50 percent (B50), 70 percent (B70) and 100 percent (B100) concentration levels, with the biodiesel being mixed with the ULSD. The selection of ULSD as the base and mixing fuel was made since this fuel is now required for on-road use.

Ten types of DoD operated diesel engines were included in the test, including engines used for on-road, off-road, and portable power applications. Both tactical and non-tactical vehicles and portable power generators were included in the test program. Test engines were selected for inclusion in the demonstration based on their widespread use within DoD and supplied by a number of DoD facilities.

This project focused on B20 biodiesel blends, since this is the blend of biodiesel used in military vehicles. The project

results show that the regulated emissions using B20 varies over the ten types of engines tested, showing no consistent trends in emission reductions. No differences in emissions were found among the various yellow grease and soy-based biodiesel feedstocks. The results of more extensive statistical analyses also indicate no significant differences in CO, HC, NO_x and PM emissions between the B20 biodiesel and the ULSD petroleum fuel. Additionally, the tested NO_x reduction additives proved to be ineffective.

HAPs testing occurred on fewer vehicles than the regulated emissions testing due to the high expense for laboratory analysis. Like the regulated emissions, the unregulated HAP emissions varied over the tested engine types showing no consistent trends in emission reductions.

The project results show that the use of B20 rivals the results of the baseline ULSD fuel which proved to be greatly superior to the previously required on-road Diesel No. 2. From a lifecycle cost standpoint, the use of B20 is also the most cost effective method for DoD fleets to meet their alternative vehicle requirements specified in the Energy Policy Act of 1992. Use of biodiesel also offers benefits in

To obtain real world data, NFESC personnel performed all emissions testing with the engines installed in the applicable generators and vehicles.



Marine Corps Humvee being testing in the University of California, Riverside Light-Duty Vehicle Emissions Testing Laboratory.

The project results show that the use of B20 rivals the results of the baseline USLD fuel.

reducing greenhouse gas emissions as well as the potential for stabilizing DoD fuel costs. By using B20 in place of petroleum diesel, no new infrastructure is required and no additional environmental compliance costs incurred. The only potentially significant biodiesel implementation cost is the cost premium for biodiesel, which has recently ranged from zero to 14 cents per gallon of fuel.

Detailed project results are available by requesting the Naval Facilities Engineering Command Technical Report, TR-2275-ENV; Effect of Biodiesel on Diesel Engine Nitrogen Oxide and Other Regulated Emissions Project No. WP-0308 (dated May 2006). [↗](#)

Photos provided by the University of California, Riverside—College of Engineering. Used by permission.

CONTACT

Bruce Holden
Naval Facilities Engineering Service Center
805-982-6050
DSN: 551-6050
bruce.holden@navy.mil

If you would like to share your pollution prevention success stories, or would like additional information on the Navy's technology transfer program, contact Andrew Drucker at 805-982-1108, DSN: 551-1108 and andrew.drucker@navy.mil.

ONE OF MY Best Shots

Flight of the Phoenix

(Phoenix *Canariensis*)

Workers lower a 17,000-pound Canary Island date palm (Phoenix *Canariensis*) into a pit on the Naval Postgraduate School campus in Monterey, CA. The tree was transplanted to the administration building's front lawn on 16 May 2006 as part of a four million dollar steam refit project on campus. According to Lt. j.g. Mark McWilliams, Resident Officer-in-Charge of Construction (ROICC), this tree, among others, was in the way of the new steam pipes that were being installed. All transplantations are included as part of the refit contract written by the ROICC office.

This family of palms can grow up to 20 meters and joins at least four other palms that now frame the Naval Postgraduate School's signature building.

I used a Canon 10D 6.3 Mb DSLR 19-35mm Tamron lens shot at 19mm 1/125 5.6 ISO 100/fine with a Canon 580X flash fill.



Photo by Javier Chagoya • Campus Photographer • Naval Postgraduate School • Monterey, CA

Submit your own **Best Shot** to Bruce McCaffrey, Currents' managing editor, at brucemccaffrey@sbcglobal.net.

DoD Showcases

Biodiesel Products

Navy Participates in Pentagon Event

The U.S. Department of the Navy (DON) participated in the Department of Defense (DoD) biobased product showcase and educational event on 12-13 September 2006.

Held at the Pentagon, the purpose of the event was to facilitate information sharing among the biobased product industry and those in DoD who specify, buy, and/or use commercial or industrial products in DoD operations. Guest speakers included Deputy Secretary of Defense Gordon England, Secretary of Agriculture Mike Johanns, Senators Tom Harkin (D-IA) and Richard Lugar (R-IN), and Congresswoman

Marcy Kaptur (D-OH).

The Pentagon biobased products event supported DoD's Green Procurement Program as well as Section 9002 of the Farm Security and Rural Investment Act of 2002, which directs Federal agencies to establish procurement preference programs for biobased products. As Deputy Secretary England noted, "the use of biobased products not only helps meet the mission needs of DoD, it also protects the environment. Biobased products provide a sound alternative in a variety of DoD operations and applications and support energy security by replacing non-renewable fossil energy-based products derived from imported oil and natural gas supports."

Entitled "Department of Defense Biobased Products: Enhance the Mission; Protect the Environment", the event included over 40 government and industry booths displaying biobased products and initiatives and offering valuable insight into the biobased products that are on the market as well as DoD success stories. The DON display demonstrated the Navy's leadership in biobased products usage and highlighted a soy-based paint stripper used to renovate and update submarines at the Portsmouth Naval Shipyard (PNS) on Seavey Island between New Hampshire and Maine. In the past, PNS used a methylene chloride product, classified as a Volatile Hazardous Air Pollutant, that required extensive controls (e.g., ventilation and respirators) to protect workers when removing both paint

"B20 is easy to use, performs as well or better than diesel and is a safe, sensible way for us to meet our federal requirements to reduce petroleum consumption."

—Donald R. Schregardus
Deputy Assistant Secretary of the Navy (Environment)

and adhesives from submarines. Since 2001, PNS's use of the biobased paint stripper has decreased health risks for workers and made the facility more environmentally friendly.

The DON has also taken a proactive stance in reducing the consumption of petroleum. In 2005, the Navy announced a new policy leading to greater use of biodiesel. Principal Deputy Assistant Secretary (Installations and Environment) Wayne Army issued a memorandum stating that most U.S. Navy and Marine non-tactical diesel vehicles shall operate on a blend of 20 percent biodiesel fuel (B20) no later than 1

June 2005. "B20 was an ideal choice for the Navy and Marines because it's easy to use, performs as well or better than diesel and is a safe, sensible way for us to meet our federal requirements to reduce petroleum consumption," stated Donald R. Schregardus, Deputy Assistant Secretary of the Navy (Environment). "But we decided to take it a step above and beyond what the military is required to do. By bringing B20 to virtually every Navy and Marine base nationwide, we are significantly decreasing our reliance on fossil fuels."

For more insights into the Navy's efforts to integrate the use of alternative fuels,

including biodiesel, into its everyday operations, read our article entitled, "Fueling the Navy in a Petroleum-Challenged World: Forging Ahead with AFV Demos & Fleet Integration," on pages 8–18 of this issue of Currents.

In June 2005, the National Biodiesel Board (NBB) awarded the DON the National Energy Security Award for Outstanding Energy Leadership through Biodiesel. Joe Jobe, Executive Director of the NBB stated, "The Department of the Navy is the largest diesel fuel user in the world, and by taking responsibility for reducing its own use of petroleum, the Navy has demonstrated exceptional leadership

DOD'S GREEN PROCUREMENT PROGRAM

More information about DoD's Green Procurement Program can be found in our article entitled, "The Essence of DoD's Green Procurement Strategy: Promoting Environmental Stewardship Through Green Procurement," in the fall 2005 issue of Currents. Additional insights into the Navy's efforts to identify and procure environmentally-friendly products and services can be found in our article entitled, "Buying

Green: Navy Awash in Green Procurement," in the same issue. You can browse the entire Currents archives via the Naval Air Systems Command's environmental web site at www.enviro-navair.navy.mil. Currents is also available on the Defense Environmental Network & Information eXchange at www.denix.osd.mil through the "Public Menu" and the "Publications>Navy" link.





From left, Deputy Secretary of Defense Gordon England, Secretary of Agriculture Mike Johanns, Senator Richard Lugar (R-IN), Representative Marcy Kaptur (D-OH) and Senator Tom Harkin (D-IA) spoke at the Pentagon biobased products event.

in advancing the use of biodiesel and other alternative fuels. With the United States importing more than half of the oil it uses, turning to domestic energy sources like biodiesel is vital. The Navy has recognized the importance of increasing domestic energy security by turning to homegrown solutions.”

That summer, the U.S. Marine Corps (USMC) also received one of the government’s highest environmental honors when they were awarded a White House Closing the Circle (CTC) Award in the category “Energy Efficiency in Transportation—Military”. Exceeding Energy Policy Act requirements, the USMC led DoD and other federal agencies by widely adopting biodiesel, and

introducing and expanding the use of neighborhood electric vehicles. In doing so, the USMC met Executive Order 13149 requirements two years ahead of schedule. During Fiscal Year 2004, the Marine Corps had a 27.5 percent reduction in fuel consumption and used more than 1.2 million gallons of biodiesel. In addition to the 28 neighborhood electric vehicles purchased in 2004, the Marine Corps plans to procure 48 hybrid vehicles for use by its recruiting force and is taking an active step for the future of hydrogen-powered fuel cell vehicles.

Biobased products are an integral part of DoD’s environmental stewardship. As the single largest federal purchaser of goods and services, DoD is committed to increasing the procurement and use of environmentally preferable products. DoD has increased its green purchasing by 75 percent

THE NAVY’S AWARD

For more information on the Navy’s award that it received from the NBB, read our article entitled, “Navy Presented with Energy Security Award: Recognized for Ongoing Leadership Through Biodiesel & Other Alternative Fuels,” in the fall 2005 issue of *Currents*.



Award Winners

For information on the 2006 CTC Navy award winners, read our article entitled, “Closing the Circle with White House Awards: Navy Gets Nods for Sustainable Design & Alternative Fuels,” on pages 38–41 of this issue of *Currents*.


“The Navy has recognized the importance of increasing domestic energy security by turning to homegrown solutions.”

— Joe Jobe
Executive Director of the National Biodiesel Board

from \$57 million in 2002 to \$100 million in 2005. Deputy Secretary of Defense Gordon England stressed DoD has “...a lot of market clout, and the decisions we make affect markets. . . . so that gives us an opportunity, but also places on DoD a responsibility in this area to set the standards and to lead the way for the federal government.”

DoD will continue to make “great strides in the bio-based products effort, and as the (U.S. Department of

Agriculture) program moves forward...” as the Secretary of Agriculture Mike Johanns remarked at the Biobased Products Event. In a memo dated 17 August 2006, Under Secretary of Defense for Acquisition, Technology and Logistics Kenneth Krieg reaffirmed DoD’s commitment to expand the use of biobased products and the Department’s Green Procurement Program. The memo strongly encourages DoD activities to purchase and use biobased alternative products and to initiate projects which further demonstrate the value and utility of these materials in DoD applications. In addition, DoD is to consider related products which are based on renewable materials, including biofuels and alternative energy, biodegradable materials including compostable food packaging, and wood products which originate from sustainably managed forests.

The expanded use of biobased products makes good sense for both DoD and our Nation. As England stated at the September 2006 biobased products event “Biobased products are an integral part of our overall strategy...Our strategy also supports long-term national security by protecting and preserving the environment for future generations.” 

Photos courtesy of the United Soybean Board.



Deputy Secretary of Defense Gordon England opening remarks at the Pentagon biobased products event on 12 September 2006.

CONTACT

Dave Asiello
Office of Deputy Under Secretary of
Defense (Installation & Environment)
703-571-9068
DSN: 571-9068
david.asiello@osd.mil

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ESOH Coordinators Now Have Tool to Create Quality Program Documents

Environmental, Safety and Occupational Health (ESOH) Coordinators who help acquisition program managers identify, evaluate, and mitigate their programmatic ESOH risks now have the help of an automated tool to generate standard, high quality Programmatic Environmental, Safety and Health Evaluations (PESHE) for

their programs major milestones. This tool is called PESHE DAT (for Document Authoring Tool) and is available through the Naval Air Systems Command's (NAVAIR) environmental web site.

NAVAIR's Program Management Competency's Environmental Programs Department (AIR 1.6) has assembled a cadre of seasoned ESOH Coordinators who help programs

develop and update their PESHEs and meet Milestone Decision Authority (MDA) requirements per Department of Defense Instruction 5000.2. To support this mission, AIR 1.6 provides oversight, training, tools, and guidance to support this team of ESOH Coordinators.

AIR 1.6's mission is to provide efficient and cost effective environmental products and services to help NAVAIR Program Executive Offices (PEO) and Program Managers—Air (PMA) identify and mitigate ESOH risks. And PESHE DAT is just one of the many tools available to ESOH Coordinators.

PESHEs Generated Using PESHE DAT

already AIR 1.6 ESOH Coordinators have used PESHE DAT to generate standard, quality PESHEs for the following acquisition programs:

Program	PMA
Fire Scout Vertical Take-Off and Landing Tactical Unmanned Air System	263
Broad Area Maritime Surveillance	263
Automatic Carrier Landing System Life Cycle Extension Program	213
Joint Mission Planning System	281
Military Flight Operations Quality Assurance	209
H-1 Huey Search and Rescue Helicopter (Upgrades)	276
KC-130T Defensive Electronic Countermeasures	207
V-22 Osprey Vertical/Short Takeoff and Landing Multipurpose Tactical Aircraft	275

ESOH Coordinators are subject matter experts on ESOH laws & regulations

ESOH Coordinators

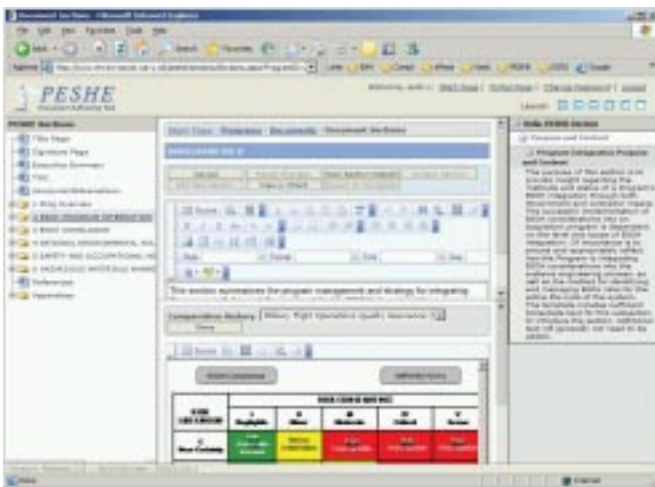
NAVAIR's ESOH Coordinators are subject matter experts on ESOH laws and regulations and provide ESOH planning support for the lifecycle management of acquisition programs throughout NAVAIR. An AIR 1.6 ESOH Working Integrated Product Team (WIPT) has been established to help PEOs and

PMAs identify and address ESOH requirements across the acquisition systems lifecycle. The primary function of these ESOH Coordinators is to identify ESOH risks and establish planning and mitigation support for incorporation into the systems acquisition process. These ESOH risks are then addressed in the program's PESHE, National Environmental Protection Act (NEPA) compliance documentation, Hazardous Materials Management Plan, and Deactivation, Demilitarization & Disposal Plan. This promotes the use of sound ESOH management principles within the program's own acquisition strategies. The ESOH WIPT provides PEOs and PMAs with the ability and expertise necessary to:

- Identify ESOH risks, liabilities, constraints, and opportunities at various stages of the acquisition lifecycle, including mitigation measures and realistic snapshots of a program's risk status,
- Understand their ESOH obligations as well as develop the support structure needed to meet those obligations,



This login screen is the entry point into PESHE DAT. A username and password is required and can be obtained by contacting an AIR 1.6 representative.



A PESHE DAT user can select different sections of the document, edit the sections based on permissions, compare the section to the same section of a different PESHE document, or access general help or ESOH Coordinator guidance.



This screen allows the author to enter risk likelihood and consequence, then automatically creates this graphic. The template has a field code which will automatically insert this graphic into a MS Word or PDF document in the proper place.

An AIR 1.6 ESOH WIPT has been established to help PEOs & PMAs identify & address ESOH requirements across the acquisition systems lifecycle.

- Develop and revise ESOH documentation and integrate ESOH lifecycle costs into a program's total cost of ownership,
- Interface with other organizations and agencies to resolve potential ESOH issues stemming from current and proposed actions, and
- Influence the regulatory community in understanding their impact to programs.
- Standardized PESHE template including an ESOH risk assessment approach and matrix for identifying and planning for programmatic risks throughout the lifecycle.
- Easy-to-use interface which allows for the development of multiple documents and addressing updated requirements within the acquisition management framework.
- Collaborative environment for development of the PESHE amongst ESOH Coordinators and other subject matter experts assigned to specific roles within the program's environmental team.

PESHE DAT

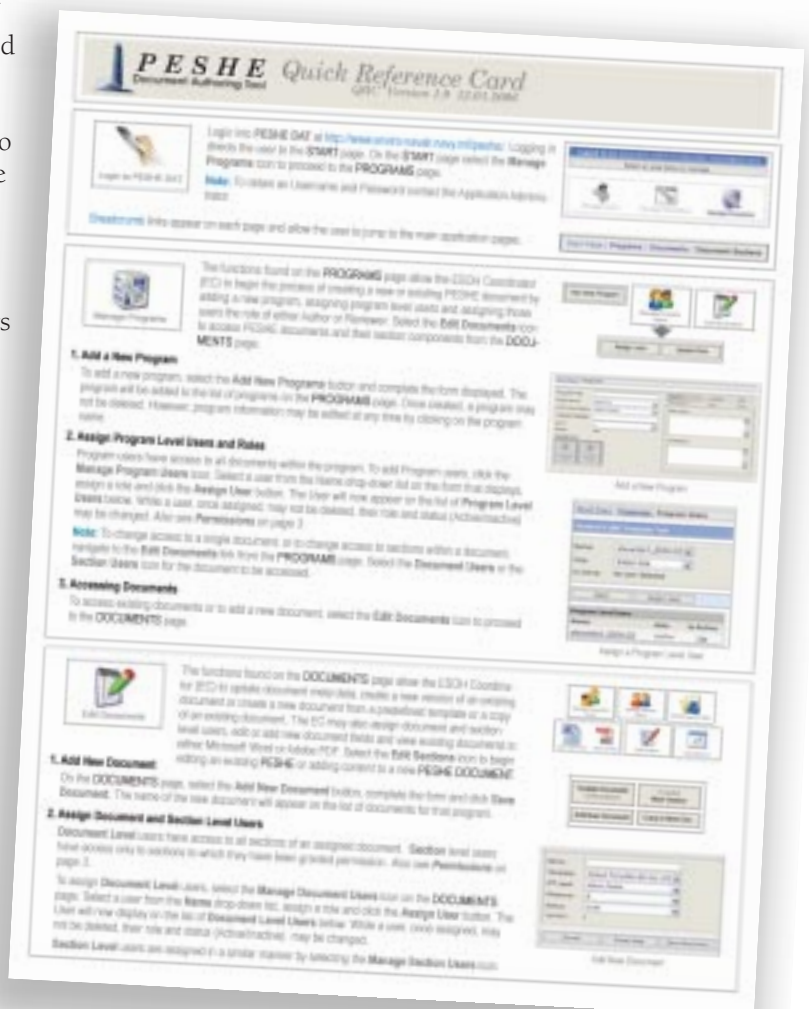
The PESHE requirements for an acquisition program are complex and it is difficult, at times, to address all areas of ESOH risk adequately. With this in mind, AIR 1.6 believed there was an opportunity to standardize the ESOH risk process, improve the consistency and quality of NAVAIR PESHE documents, reduce the amount of time required to complete a PESHE document, and support a collaborative process among ESOH Coordinators and Acquisition Program Managers.

AIR 1.6 developed PESHE DAT to enhance the efficiency and effectiveness with which ESOH Coordinators are able to generate PESHEs for their respective programs. This tool provides a consistent and comprehensive method to standardize the development of PESHE documents regardless of milestone or system type. PESHE DAT enables ESOH Coordinators to utilize help information, standard language, and examples to support documentation requirements. Future expansion of the functionality will also bring a standard repeatable process to the assessment of risk which will follow the fundamentals of risk management for acquisition programs.

How PESHE DAT Does What It Does

This tool offers an integrated best practices approach for ESOH risk management. Features of PESHE DAT include:

Software developers built Quick Reference Cards to guide ESOH Coordinators as they use PESHE DAT to build their program documentation.

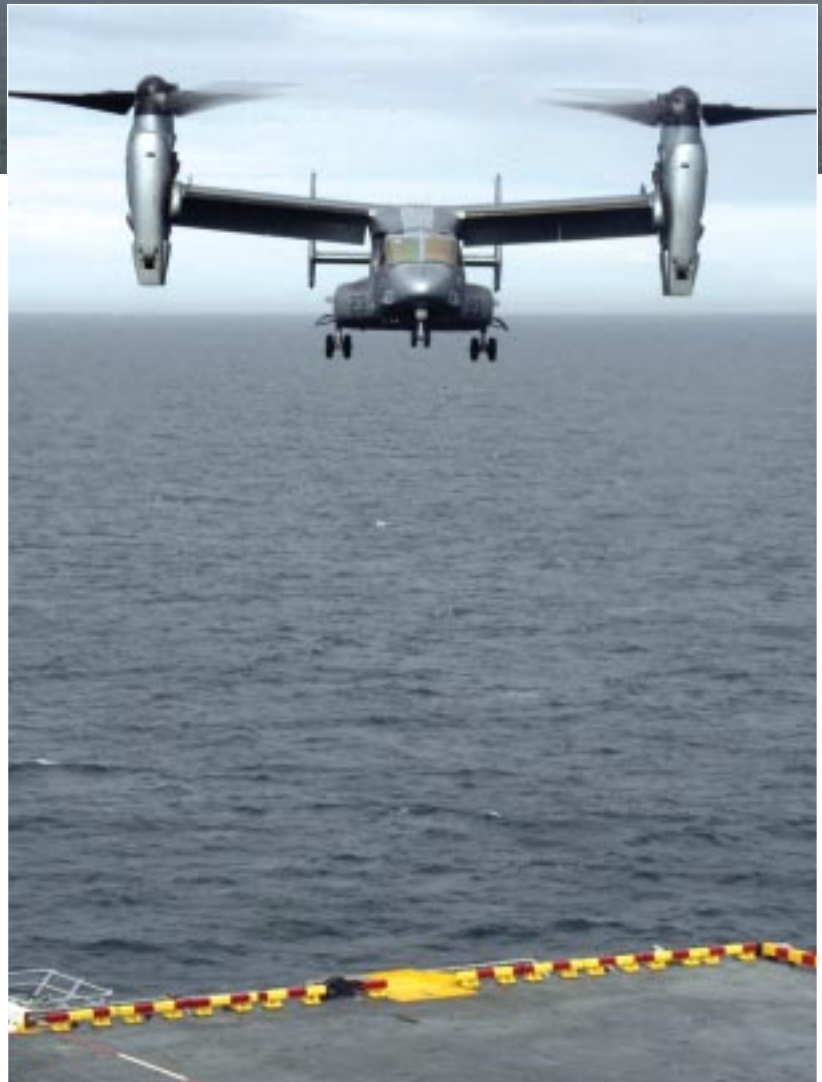


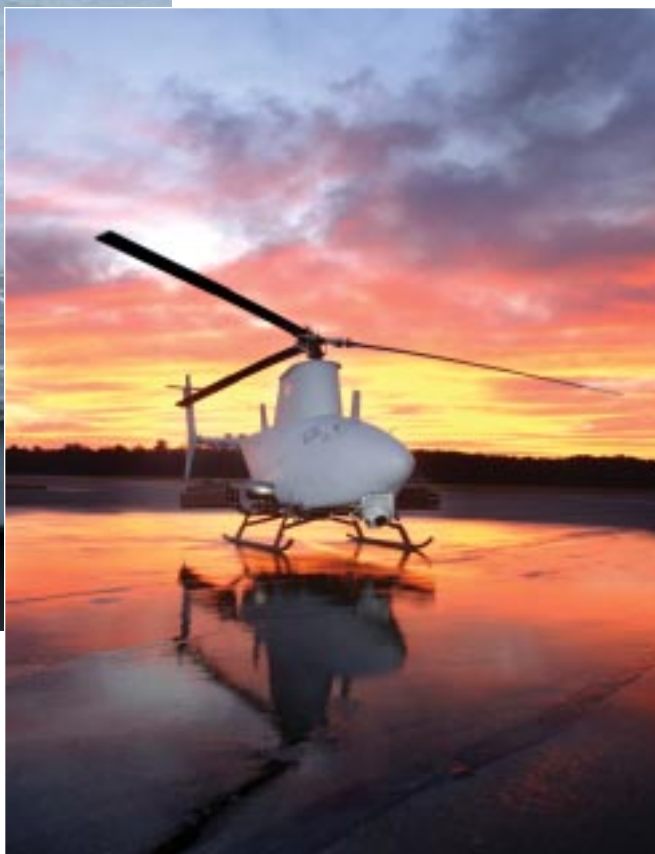


PESHE DAT was also used to construct a PESHE for the Marine Corps' V-22 Osprey—an advanced technology, vertical/short takeoff and landing multipurpose tactical aircraft.

U.S. Navy photos by Photographer's Mate
Airman Zachary L. Borden

- Document configuration management from first to the final draft, signed version of the PESHE document, and version storage for a complete history of the development effort.
- Interactive repository of ESOH guidance and PESHE documents developed within the tool which is easily accessible while writing and editing the PESHE.
- Search capability to conduct comparative analyses among PESHE documents maintained in the knowledge base, thereby providing ESOH Coordinators with the ability to research the history of previous ESOH considerations on NAVAIR systems that may be relevant to current ESOH requirements.
- Linkage to other AIR 1.6 applications to research and incorporate important ESOH data, such as ESOH regulatory issues,





AIR 1.6 ESOH Coordinators used PESHE DAT to construct a PESHE to support the RQ-8A Fire Scout Vertical Takeoff and Landing Tactical Unmanned Aerial Vehicle program. Utilizing a baseline payload that includes electro-optical/infrared sensors and a laser rangefinder/designator, Fire Scout can find and identify tactical targets, track and designate targets, accurately provide targeting data to strike platforms, employ precision weapons, and perform battle damage assessment.

U.S. Navy photos by Kurt Lengfield

in support of identifying ESOH risks and developing risk management strategies for inclusion in various sections of the PESHE template.

- Flexibility to insert additional PESHE related templates and guidance (such as different system commodities, other System Commands, NEPA, etc.).
- A system administrator module to maintain and modify user access, PESHE templates, etc.
- Up-to-date regulatory and statutory requirements integrated into templates to ensure compliance with the latest guidance from the Department of Defense, Secretary of the Navy, and elsewhere.

PESHE DAT enables ESOH Coordinators to ensure that consistent, comprehensive and affordable PESHEs are conducted for all NAVAIR acquisition programs.

Summary

Program Managers are ultimately responsible for ESOH risk management within their programs. Use of AIR 1.6's ESOH Coordination capabilities provides a layer of confidence to NAVAIR Program Managers that:

- ESOH risks and solutions are comprehensively identified and mitigated,
- Required documentation is streamlined, and
- Available efficiencies are leveraged for their programs.

AIR 1.6 understands the many challenges PEOs and PMAs face in identifying and effectively managing ESOH risk for their acquisition programs. AIR 1.6 intends to foster the awareness of its acquisition ESOH products and services to PEOs and PMAs. This will ensure that ESOH risk management is successfully integrated into the

NAVAIR system acquisition lifecycles and ESOH risks and liabilities are affordably reduced.

For insights into accessing PESHE DAT or for more information about other AIR 1.6 products and services, contact the AIR 1.6 representative listed below or visit the NAVAIR environmental website at www.enviro-navair.navy.mil. Consultants from Booz Allen Hamilton provided software development services for PESHE DAT. ⚓

CONTACT

Bob Hicks
 Naval Air Systems Command
 301-757-2148
 DSN: 757-2148
robert.hicks@navy.mil

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- Personnel from the Naval Air Station Key West, FL efforts to combat invasive, exotic vegetation on air station property and restore the grounds with native trees and vegetation, and
- A Naval Facilities Engineering Service Center project that shows air pollution emission factors for biodiesel compares quite favorably with the newly required ultra-low sulfur diesel.

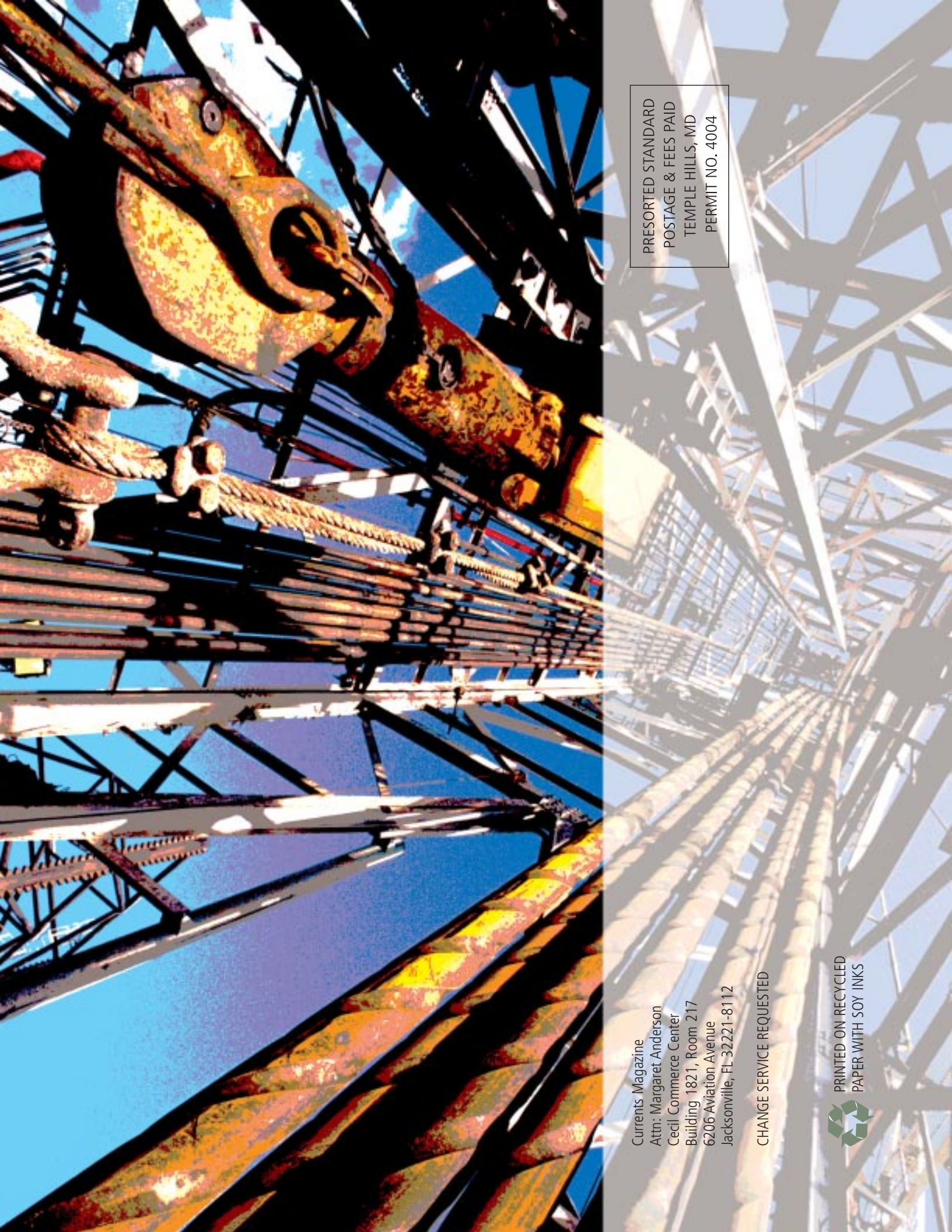
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